



Volume 4

Socio-Economic Profile
Environmental Quality
Archaeological Resources

ILLINOIS RIVER BLUFFS AREA ASSESSMENT



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ILLINOIS RIVER BLUFFS
AREA ASSESSMENT.

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ILLINOIS RIVER BLUFFS AREA ASSESSMENT

VOLUME 4

Part I: Socio-Economic Profile

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Other CTAP Publications

The Changing Illinois Environment: Critical Trends, summary and 7-volume technical report
Illinois Land Cover, An Atlas, plus CD-ROM
Inventory of Ecologically Resource-Rich Areas in Illinois
Rock River Area Assessment, 5-volume technical report
The Rock River Country: An Inventory of the Region's Resources
Cache River Area Assessment, 5-volume technical report
The Cache River Basin: An Inventory of the Region's Resources
Mackinaw River Area Assessment, 5-volume technical report
The Mackinaw River Country: An Inventory of the Region's Resources
The Illinois Headwaters: An Inventory of the Region's Resources
Headwaters Area Assessment, 5-volume technical report
The Illinois Big Rivers: An Inventory of the Region's Resources
Big Rivers Area Assessment, 5-volume technical report
The Fox River Basin: An Inventory of the Region's Resources
Fox River Area Assessment, 5-volume technical report
The Kankakee River Valley: An Inventory of the Region's Resources
Kankakee River Area Assessment, 5-volume technical report
The Kishwaukee River Basin: An Inventory of the Region's Resources
Kishwaukee River Area Assessment, 5-volume technical report
Embaras River Area Assessment, 5-volume technical report
Upper Des Plaines River Area Assessment, 5-volume technical report
Annual Report 1997, Illinois EcoWatch
Stream Monitoring Manual, Illinois RiverWatch
Forest Monitoring Manual, Illinois ForestWatch
Illinois Geographic Information System, CD-ROM of digital geospatial data

All CTAP and Ecosystems Program documents are available from the DNR Clearinghouse at (217) 782-7498 or TDD (217) 782-9175. Selected publications are also available on the World Wide Web at <http://dnr.state.il.us/ctap/ctaphome.htm>, or <http://dnr.state.il.us/c2000/manage/partner.htm>, as well as on the EcoForum Bulletin Board at 1 (800) 528-5486 or (217) 782-8447.

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About This Report

The Illinois River Bluffs Area Assessment examines an area in west-central Illinois that includes parts of the upper and lower Illinois River watersheds from the vicinity of Hennepin southward to East Peoria. Because significant natural community and species diversity is found in the area, it has been designated a state Resource Rich Area.¹

This report is part of a series of reports on areas of Illinois where a public-private partnership has been formed. These assessments provide information on the natural and human resources of the areas as a basis for managing and improving their ecosystems. The determination of resource rich areas and development of ecosystem-based information and management programs in Illinois are the result of three processes -- the Critical Trends Assessment Program, the Conservation Congress, and the Water Resources and Land Use Priorities Task Force.

Background

The Critical Trends Assessment Program (CTAP) documents changes in ecological conditions. In 1994, using existing information, the program provided a baseline of ecological conditions.² Three conclusions were drawn from the baseline investigation:

1. the emission and discharge of regulated pollutants over the past 20 years has declined, in some cases dramatically,
2. existing data suggest that the condition of natural ecosystems in Illinois is rapidly declining as a result of fragmentation and continued stress, and
3. data designed to monitor compliance with environmental regulations or the status of individual species are not sufficient to assess ecosystem health statewide.

Based on these findings, CTAP has begun to develop methods to systematically monitor ecological conditions and provide information for ecosystem-based management. Five components make up this effort:

1. identify resource rich areas,
2. conduct regional assessments,
3. publish an atlas and inventory of Illinois landcover,
4. train volunteers to collect ecological indicator data, and
5. develop an educational science curriculum which incorporates data collection

¹ See *Inventory of Resource Rich Areas in Illinois: An Evaluation of Ecological Resources*.

² See *The Changing Illinois Environment: Critical Trends*, summary report and volumes 1-7.

At the same time that CTAP was publishing its baseline findings, the Illinois Conservation Congress and the Water Resources and Land Use Priorities Task Force were presenting their respective findings. These groups agreed with the CTAP conclusion that the state's ecosystems were declining. Better stewardship was needed, and they determined that a voluntary, incentive-based, grassroots approach would be the most appropriate, one that recognized the inter-relatedness of economic development and natural resource protection and enhancement.

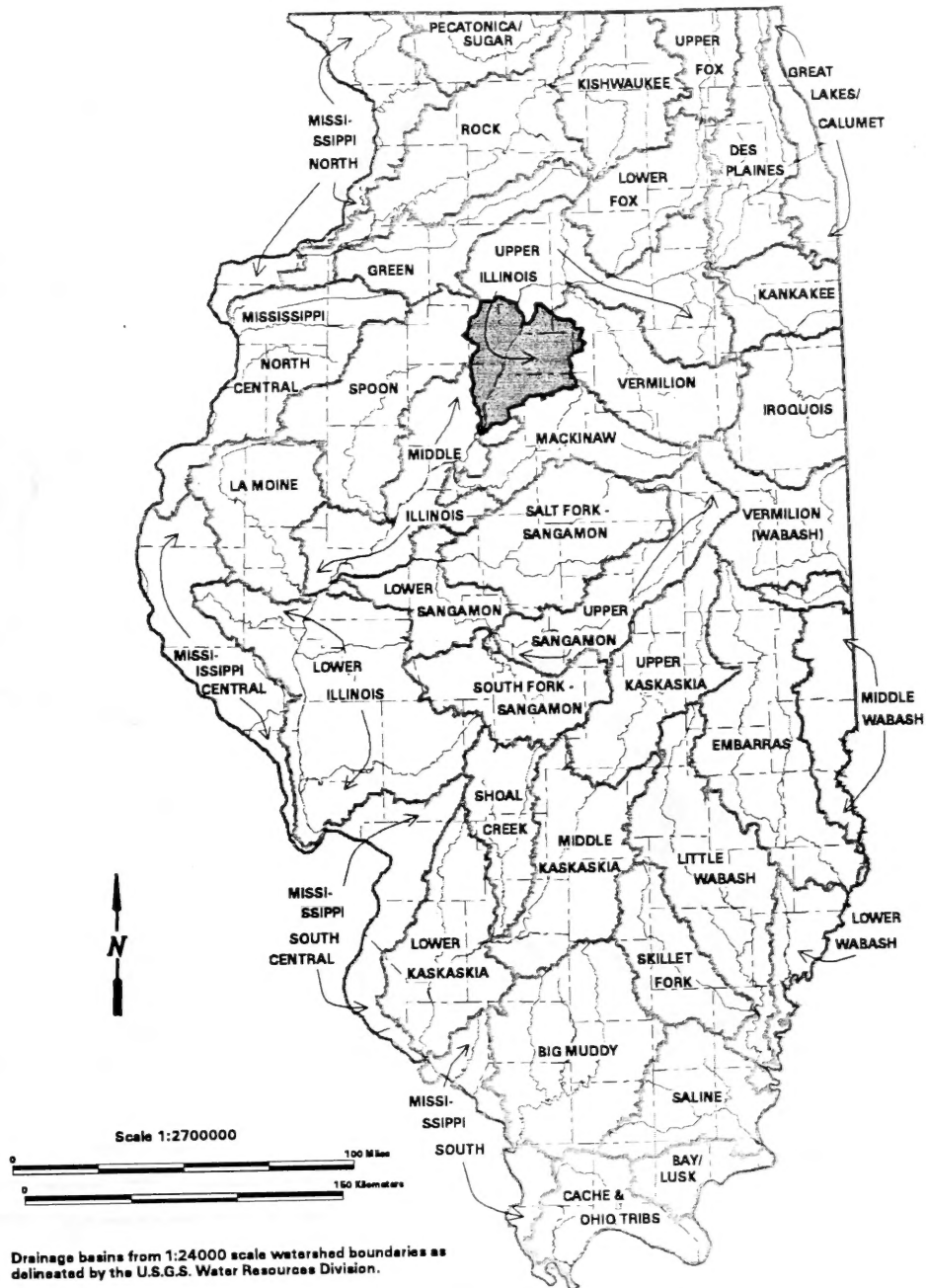
From the three initiatives was born Conservation 2000, a six-year program to begin reversing ecosystem degradation, primarily through the Ecosystems Program, a cooperative process of public-private partnerships that are intended to merge natural resource stewardship with economic and recreational development. To achieve this goal, the program will provide financial incentives and technical assistance to private landowners. The Rock River and Cache River were designated as the first Ecosystem Partnership areas.

At the same time, CTAP identified 30 Resource Rich Areas (RRAs) throughout the state. In RRAs where Ecosystem Partnerships have been formed, CTAP is providing an assessment of the area, drawing from ecological and socio-economic databases to give an overview of the region's resources -- geologic, edaphic, hydrologic, biotic, and socio-economic. Although several of the analyses are somewhat restricted by spatial and/or temporal limitations of the data, they help to identify information gaps and additional opportunities and constraints to establishing long-term monitoring programs in the partnership areas.

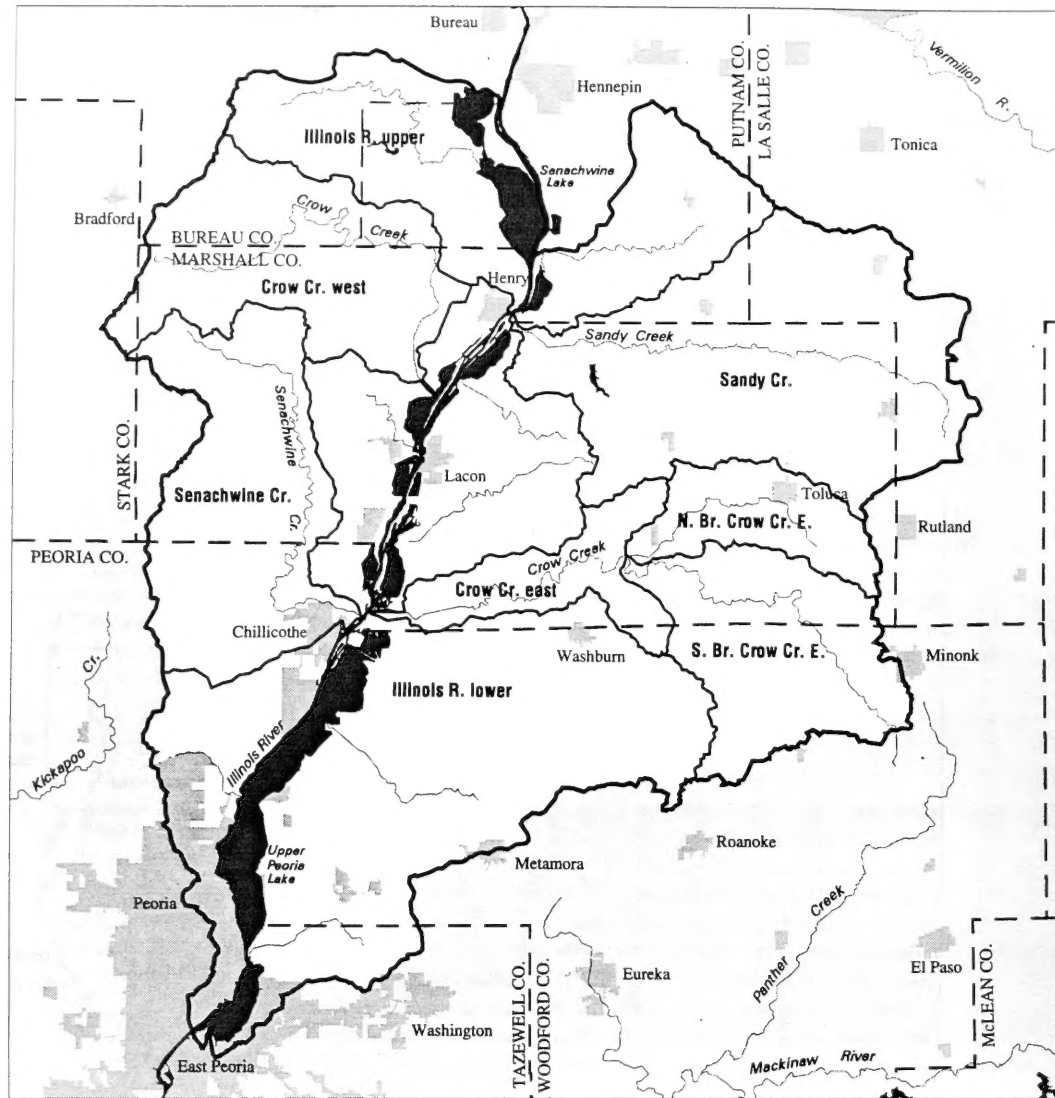
The Illinois River Bluffs Assessment

The Illinois River Bluffs Assessment covers an area of about 560,871 acres in west central Illinois. It includes parts of the upper and lower Illinois River watersheds from the vicinity of Hennepin southward to East Peoria. Counties encompassed in this assessment include most of Marshall and Woodford counties as well as small portions of Stark, Bureau, La Salle, Tazewell, Putnam, and Peoria counties. In addition to containing a portion of the Illinois River Drainage basin (Illinois River upper and lower), this area also encompasses portions of the Crow Creek west, Sandy Creek, Senachwine Creek and Crow Creek east drainage basins as identified by the Illinois Environmental Protection Agency. Three of the sub-basins in this assessment area (Illinois River lower, Senachwine Creek, and Crow Creek east) were designated as "Resource Rich Areas" (a total of 277,847 acres) because they contain significant natural community diversity. The Illinois River Bluffs Ecosystem Partnership was subsequently formed around this core area of high quality ecological resources.

This assessment is comprised of five volumes. In Volume 1, *Geology* discusses the geology, soils, and minerals in the assessment area. Volume 2, *Water Resources*, discusses the surface and groundwater resources and Volume 3, *Living Resources*, describes the natural vegetation communities and the fauna of the region. Volume 4



Major Drainage Basins of Illinois and Location of the Illinois River Bluffs Assessment Area



Subbasins in the Illinois River Bluffs Assessment Area. Subbasin boundaries depicted are those determined by the Illinois Environmental Protection Agency.

contains three parts: Part I, *Socio-Economic Profile*, discusses the demographics, infrastructure, and economy of the area, focusing on the three counties with the greatest amount of land in the area — Marshall, Peoria and Woodford; Part II, *Environmental Quality*, discusses air and water quality, and hazardous and toxic waste generation and management in the area; and Part III, *Archaeological Resources*, identifies and assesses the archaeological sites, ranging from the Paleoindian Prehistoric (B.C. 10,000) to the Historic (A.D. 1650), known in the assessment watershed. Volume 5, *Early Accounts of the Ecology of the Illinois River Bluffs Area*, describes the ecology of the area as recorded by historical writings of explorers, pioneers, early visitors and early historians.

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PART I

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Summary

The Illinois River is central to the economy, the recreation, the natural setting of the River Bluffs area. It carved the bluffs that give the area its name. It feeds the backwater lakes that attract migratory birds and other wildlife and that support a variety of recreation (including birding, boating, hunting, and fishing). It supports the economy of the area, providing a source of water for drinking and industry and transportation to markets for the products of the area's fields and factories. The Illinois River forms the backbone of the Peoria metropolitan area, if not of the state.

This report profiles the socio-economic characteristics of the three main counties of the Illinois River Bluffs area -- Marshall, Peoria, and Woodford.¹ It provides a historical perspective as well as a current picture of the human-related resources of the region.

Since 1870 the population in the Illinois River Bluffs area has grown 174% and is currently home to 2% of the state's population. Peoria County, which grew into one of the state's leading industrial centers, nearly quadrupled in population. The area's largest city, Peoria, has over 110,000 residents. Woodford County has grown only since World War II (by about 70%) as the suburbs of Peoria extended into this largely rural county, while Marshall County has remained rural and actually lost one-fourth of its population. During the 1980's, Peoria's industrial base shrank and the county lost nearly one-tenth of its population. Peoria County is predominantly urban, with 84% of its population living in urban areas and 9% of its land put to urban uses. Marshall and Woodford counties are largely rural, with less than 2.5% of their land in urban use.

In 1994, the Illinois River Bluffs area supported nearly 136,000 jobs and generated \$5.0 billion total personal income. Peoria County accounted for more than 80%. During the period 1970-1994, Woodford County experienced significant employment growth (1.7% annually), while Peoria and Marshall counties experienced slow employment growth (0.4% and 0.9% respectively).

Since the early 1970s, the economy of the Illinois River Bluffs area, as in Illinois and the U.S., has changed steadily from a manufacturing base to a more service-related economy. In the area, employment levels in manufacturing, services, and wholesale/retail were about equal in 1970. However, by 1994, service employment had doubled, while manufacturing

¹ While the accompanying natural resources assessment emphasizes the watershed as its unit of analysis, socio-economic data are displayed geographically using the 268 census block groups defined by the U.S. Census Bureau to encompass the three counties. Census block groups are small, sub-county level areas delineated by the U.S. Census Bureau for purposes of the decennial census. They are designed to be relatively homogeneous with respect to population characteristics, economic status, and living conditions. In practice they vary considerably in population and size. In the three-county area, the census block groups range from 0 to 5,348 in population and from 12 acres to 58,452 acres in land area.

employment declined and wholesale/retail grew moderately. Over the 24-year period, manufacturing's share of employment in the area fell from 21% to 12%. Services employment grew 3.5% annually and by 1994 was the largest sector in the area with 37% of employment and 31% of earnings. The largest employer in the area is Caterpillar, which has a work force of about 10,000, although it is considerably smaller than 15 years ago. All but one of the other large employers (those with more than 1,000 employees) are either hospitals or the military.

Almost 76% of the land in the Illinois River Bluffs region is considered agricultural, similar to statewide, where 77% of land is agricultural. The percentage of agricultural landscape ranges from 66% in Peoria County to 82% or more in Marshall and Woodford counties. Area farms produce 3% of the state's farm cash receipts, averaging \$182 million in crop cash receipts and \$63 million in livestock receipts annually during the 1990's. Corn and soybeans are the dominant crops as in the rest of Illinois and hogs and cattle the primary livestock. Hog production has increased in the last decade (particularly in Woodford County) while cattle production has steadily declined, with area farms averaging 173,000 hogs and 46,000 head of cattle in recent years.

Property tax revenues in the Illinois River Bluffs area are 20% below the 1971 level, because of a decline in the tax base of 56% (although the tax base has rebounded 28% since 1990). The tax rate has more than doubled in all three counties, although all three are below the state average of \$8.19 per \$100 of tax base. The majority of property tax revenues (62% to 72%) go to school districts. The make-up of the tax base varies considerably among the three counties. Marshall and Woodford counties obtain a relatively large proportion of their tax base from farm property (47% and 32%), while Peoria County obtains most of its tax base from residential and commercial property (87%), reflecting its more urban character.

Recreational opportunities abound in the areas in and around the backwater lakes of the Illinois River. The state owns two major recreation areas which together cover nearly 9,000 acres. The Marshall State Fish and Wildlife Area is comprised of three units along both banks of the Illinois River in Marshall and Peoria counties. The Woodford County Conservation Area is on the eastern side of Goose Lake, one of the Illinois River's largest backwater lakes. Most of the acreage is covered by water. Both sites offer ample opportunities for fishing, boating, hunting, hiking, camping, picnicing, and viewing wildlife. Some of the area's valuable species and natural landscapes are preserved in 12 nature preserves and 29 natural areas.

The human resources of the Illinois River Bluffs area provide an important context for future plans to manage and preserve the unique and ample natural resources of the area. This report is part of an overall assessment of the area's natural and human resources.

Demographic Trends

The character of an area is determined not only by its natural environment, but also by its human environment -- the size, growth, density, distribution and characteristics of the population living there. The following section describes population growth and distribution, and trends in age, income, education, households, and housing.

Population

Between 1870 and 1990 the combined populations of Peoria, Marshall and Woodford counties have grown only 174%, half the statewide growth of 350%. As of 1990, the River Bluffs area was home to 2% of the state's population.

Not surprisingly, urbanized Peoria County had the greatest percentage increase, up 285%. The county's growth was steady over the time period until 1980, when manufacturing jobs were lost and residents left to seek work elsewhere. Between 1980 and 1990, nearly one-tenth of the population left the county.

1990
River Bluffs Area
Square miles: 1,505.1
Population: 228,326
Density: 151.7 persons per sq. mi.
Urban population: 71.4%
11 cities
27 villages

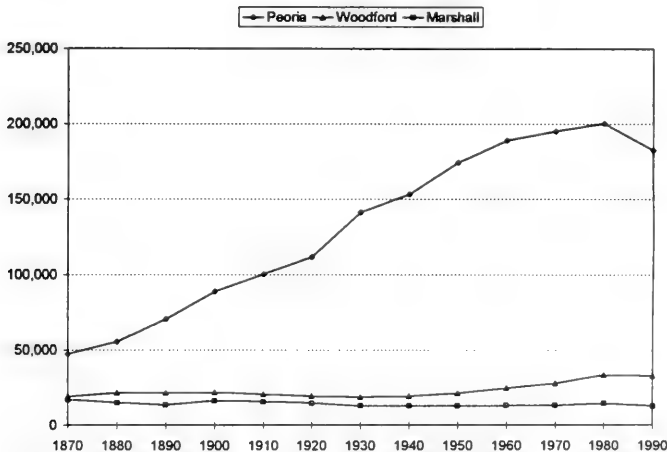


Figure 1-1. River Bluffs Area Population Trends

Figure 1-2.
Municipalities and Major Highways

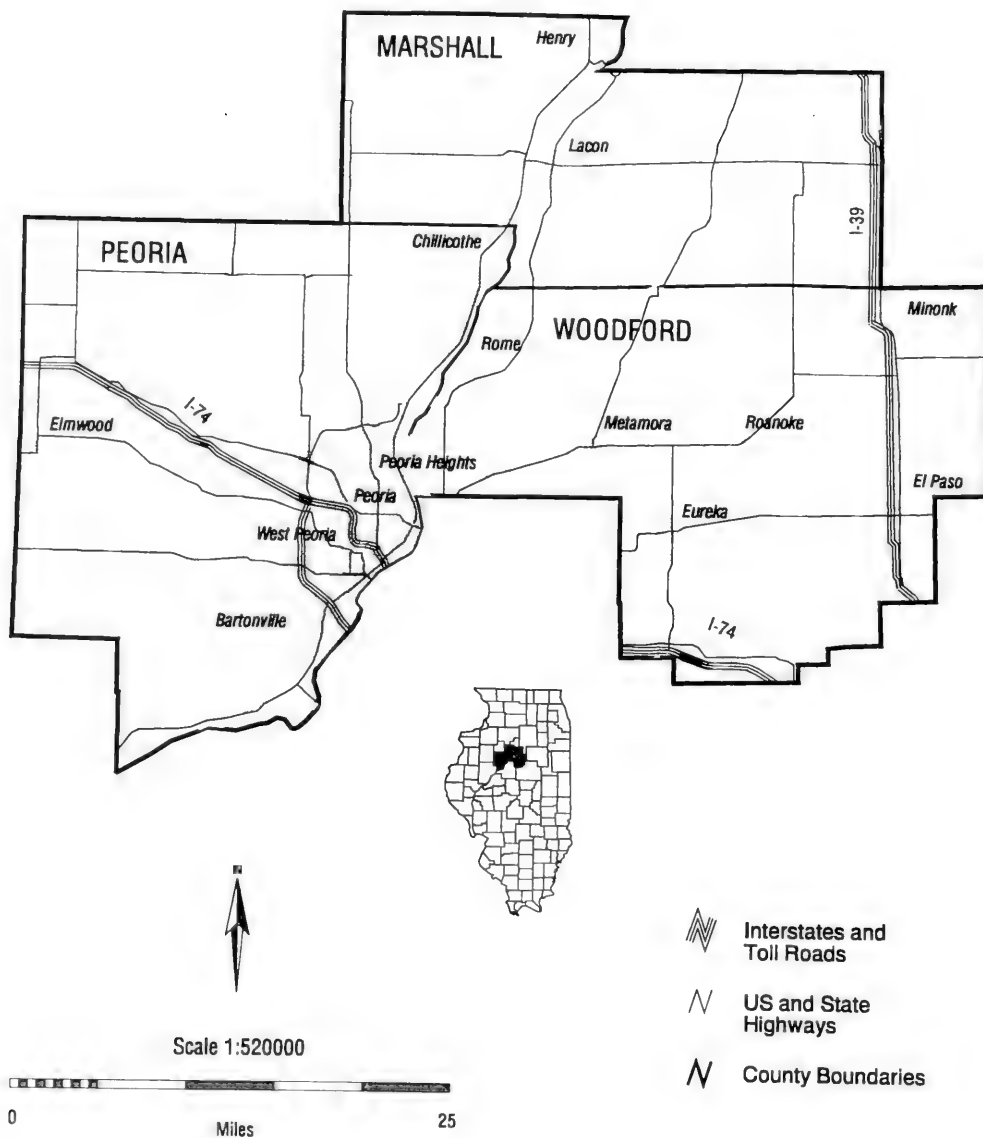


Table 1-1. Population

	1990 Population	% of Illinois Population	County Rank ²	% change, 1970-1990
Peoria	182,827	1.6%	10	-6%
Marshall	12,846	0.1%	84	-3%
Woodford	32,653	0.3%	44	17%
Region	228,326	2.0%	—	-4%
Illinois	11,430,602	100.0%	—	3%

Over the 120-year time period, the population in Marshall County dropped by one-fourth. Woodford grew a modest 72%, with much of the increase occurring in the decades following World War II.¹

All three counties are projected to continue growing over the next couple decades. By the year 2020, Peoria County is projected to grow the least, by only 1%, Marshall is projected to add 5.1% additional residents, and Woodford is projected to grow the most, 12.5%.²

Urban Population

Almost three-quarters of the area's residents live in urban areas (communities greater than 2,500 population), 71.4% compared to 85% statewide.³ Between 1970 and 1990, the greatest increase in urbanization occurred in Woodford County, which almost doubled its urban population from 10.8% to 21.5%. Both Marshall and Woodford counties are still largely rural with only about one-fifth of their residents living in urban areas. Peoria County is the most urban, with 84% urban population and a density of 295 persons per square mile.

Table 1-2. Population Density
(persons per square mile)

	1870	1910	1950	1990
Peoria	76.7	161.8	281.4	295.1
Marshall	28.1	26.0	21.6	21.3
Woodford	67.4	72.9	75.8	116.0
Region	55.4	90.7	138.7	151.7
Illinois	45.7	101.5	156.8	205.7

¹ Population data was taken from the 1993 *Illinois Statistical Abstract*, *USA Counties*, 1996, and 1920 *Census*.

² Projections and county ranking taken from 1997 *State Profile*, Woods & Poole Economics, Inc.

³ Urbanization data from 1990 and 1993 *Illinois Statistical Abstract*.

Table 1-3. Incorporated Municipalities, River Bluffs Area

	City or village	1990 Population		City or village	1990 Population
Peoria County			Sparland	V	412
Bartonville	V	5,643	Toluca	C	1,315
Bellevue	V	1,491	Varna	V	405
Brimfield	V	797	Wenona	C	950
Chillicothe	C	5,959	Woodford County		
Dunlap	V	851	Bayview Gardens	V	418
Elmwood	C	1,841	Benson	V	410
Glasford	V	1,115	Congerville	V	397
Hanna City	V	1,205	El Paso	C	2,499
Kingston Mines	V	293	Eureka	C	4,454
Mapleton	V	216	Germantown Hills	V	1,636
Norwood	V	495	Goodfield	V	454
Peoria	C	113,508	Kappa	V	134
Peoria Heights	V	6,930	Metamora	V	2,520
Princeville	V	1,421	Minonk	C	1,982
West Peoria	C	n.a.	Panola	V	43
Marshall County			Roanoke	V	1,910
Henry	C	2,591	Secor	V	389
Hopewell	V	343	Spring Bay	V	439
Lacon	C	1,986	Washburn	V	1,075
LaRose	V	130			

Source: Illinois Counties & Incorporated Municipalities, December 1, 1993, Illinois Secretary of State;

Urban Land Use

According to satellite imagery taken between 1992 and 1994, the River Bluffs Area is mostly rural, with only 4.8% of the land in urban uses, close to the statewide percentage of 5.8%.⁴ Peoria County leads the area in urban acreage -- almost 9% of its land is urban.

Table 1-4. Urban Acreage

	Urban Acres	% of County
Peoria	35,975	8.9%
Marshall	6,056	2.4%
Woodford	6,463	1.9%
Region	48,494	4.8%
Illinois	2,087,390	5.8%

⁴ *Illinois Landcover, An Atlas*, IL Department of Natural Resources, June 1996. Used here, urban land includes low, medium and high density urban land, transportation, and urban grasslands.

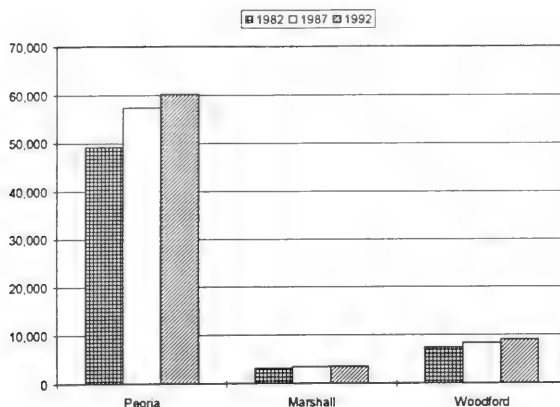


Figure 1-3. Urban Land Use (acres)

Land use information is also available from the U.S. Department of Agriculture Soil Conservation Service, which has conducted a National Resources Inventory (NRI) in 1982, 1987 and 1992 (Figure 1-3).⁵ According to the NRI, between 1982 and 1992 urban land use grew 22%, (to 7% of land) in the three-county area, compared to a 14% increase statewide. In both Peoria and Woodford counties urban land increased by almost one-quarter, while in Marshall County it increased by about 13%. During a similar time frame, the percentage of urban residents remained stable in Peoria and Marshall counties, while it nearly doubled in Woodford County.

Population Characteristics

Age

The population of the three-county area is similar to the population of Illinois as a whole, but with a slightly higher percentage of elderly -- 29.7% are under age 19 compared to 29% statewide, and 14.5% are over age 64 compared to 12.5% statewide. Like the rest of the state, the area is aging; in 1970 the young made up 37.4% of the population and the elderly 11.1%.⁶

The number of residents aged 20-64 increased between 1970 and 1980, but dropped in Peoria and Marshall

1990
River Bluffs Area
Age 0-19: 29.7%
Age 65+: 14.5%
Median age: 34
Per capita income: \$20,192
Persons in poverty: 13.2%
Minorities: 12.3%
Females/males: 52:48
High school education: 78.7%
College education: 18.7%

⁵ Because different methodologies are used and the data are collected from representative sample points in each state, the NRI data vary slightly from the satellite data.

⁶ Age, race and education data from the 1997 State Profile, Woods & Poole Economics, Inc.

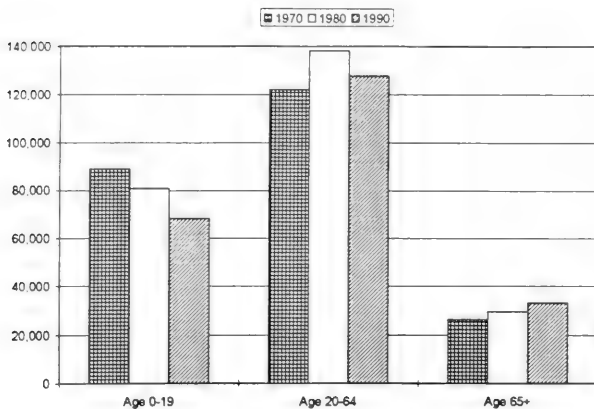


Figure 1-4. Age Distribution, River Bluffs Area

counties between 1980 and 1990, at the same time that jobs were lost and workers left the area for other employment.

In 1994 Marshall County ranked 13 in the state (out of 102 Illinois counties) in the percentage of elderly residents, with 19.4% of its residents age 65 and older, thus accounting for the area's greater percentage of elderly. Peoria and Woodford ranked 76 and 77 respectively. By 2020, the number of elderly is projected to increase in all three counties -- from 14.4% to 18.7% in Peoria County, 14.4% to 21.9% in Woodford County, and 19.4% to 26.5% in Marshall County.

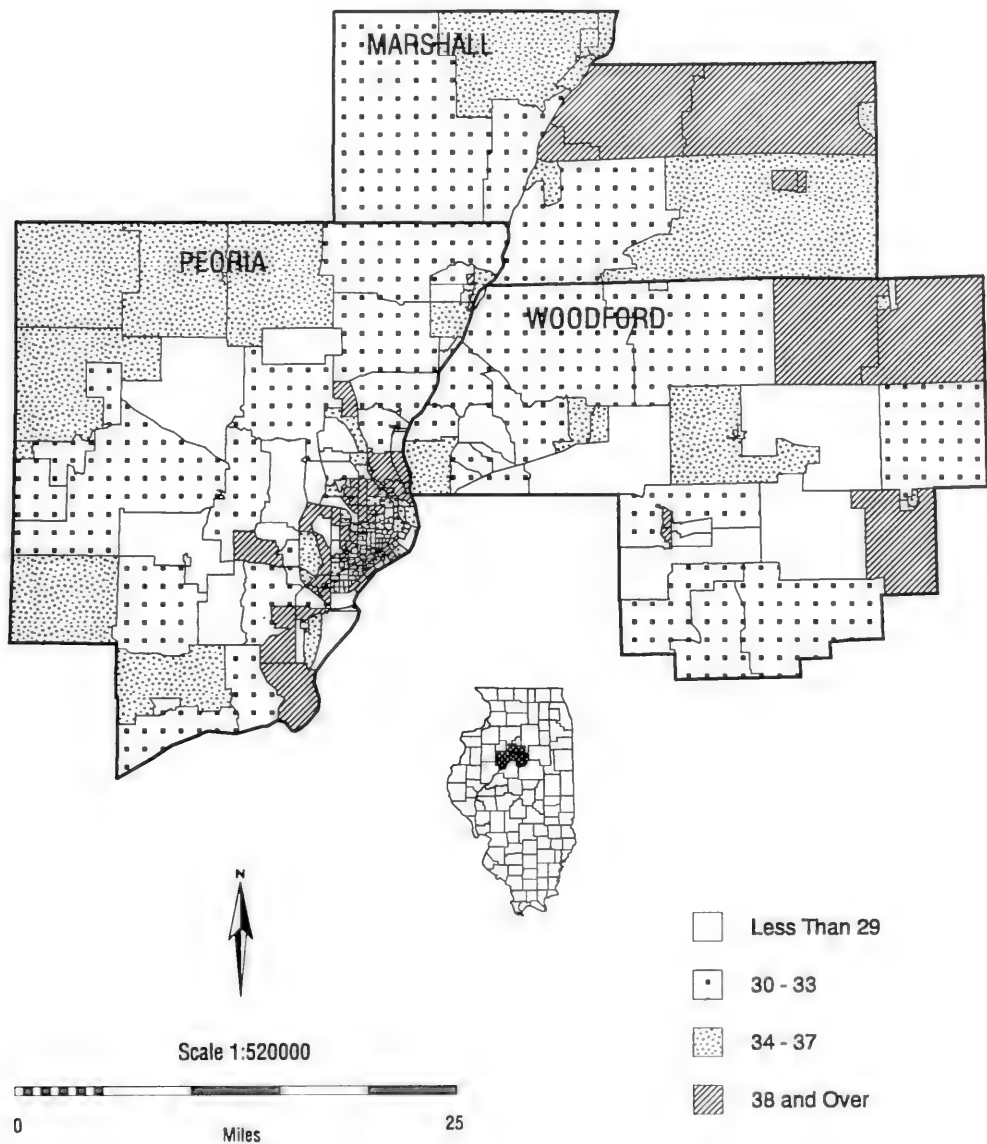
Between 1970 and 1990 median age increased 5.2 years in the combined three-county area (Table 1-5). This compares to a statewide median age increase of 4.4 years. Marshall County had the highest median age.

Figure 1-5 shows age distribution in the area by census block group. The predominantly younger populations are concentrated in the city of Peoria and in the areas surrounding Eureka and Metamora. The older populations occur along the northeastern borders of both Marshall and Woodford counties.

Table 1-5. Median Age

	1970	1980	1990
Peoria	28.6	29.4	33.8
Marshall	31.8	32.3	37.5
Woodford	28.5	29.1	34.1
Region	28.8	29.5	34.0
Illinois	28.4	29.9	32.8

Figure 1-5.
Estimated Mean Age by 1990 Census Block Group



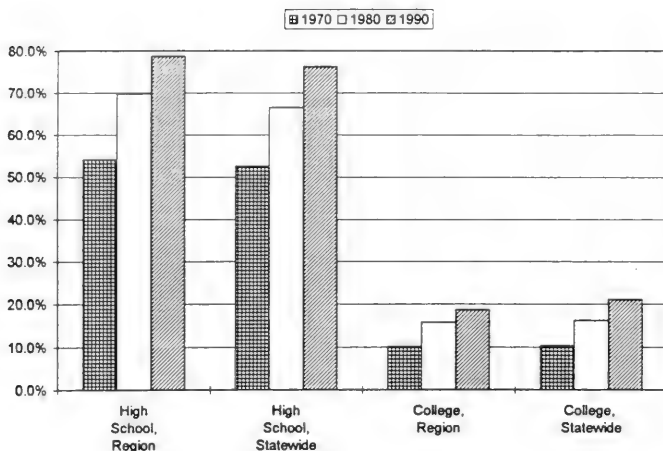


Figure 1-6. Education Trends

Education

Compared to statewide, a higher proportion of the area's residents aged 25 and older completed high school between 1970 and 1990, while a slightly lower proportion finished college. In 1990, 18.7% of area residents were college graduates compared to 21% statewide. Marshall County had the greatest number of college educated residents, 21%, followed closely by Peoria County with 19.5%; Woodford had the least with 15.4%.

The census map in Figure 1-7 shows that the more educated populations live in the western portion of Peoria, and in the areas north and northwest of the city, as well as in the areas surrounding Metamora and Eureka.

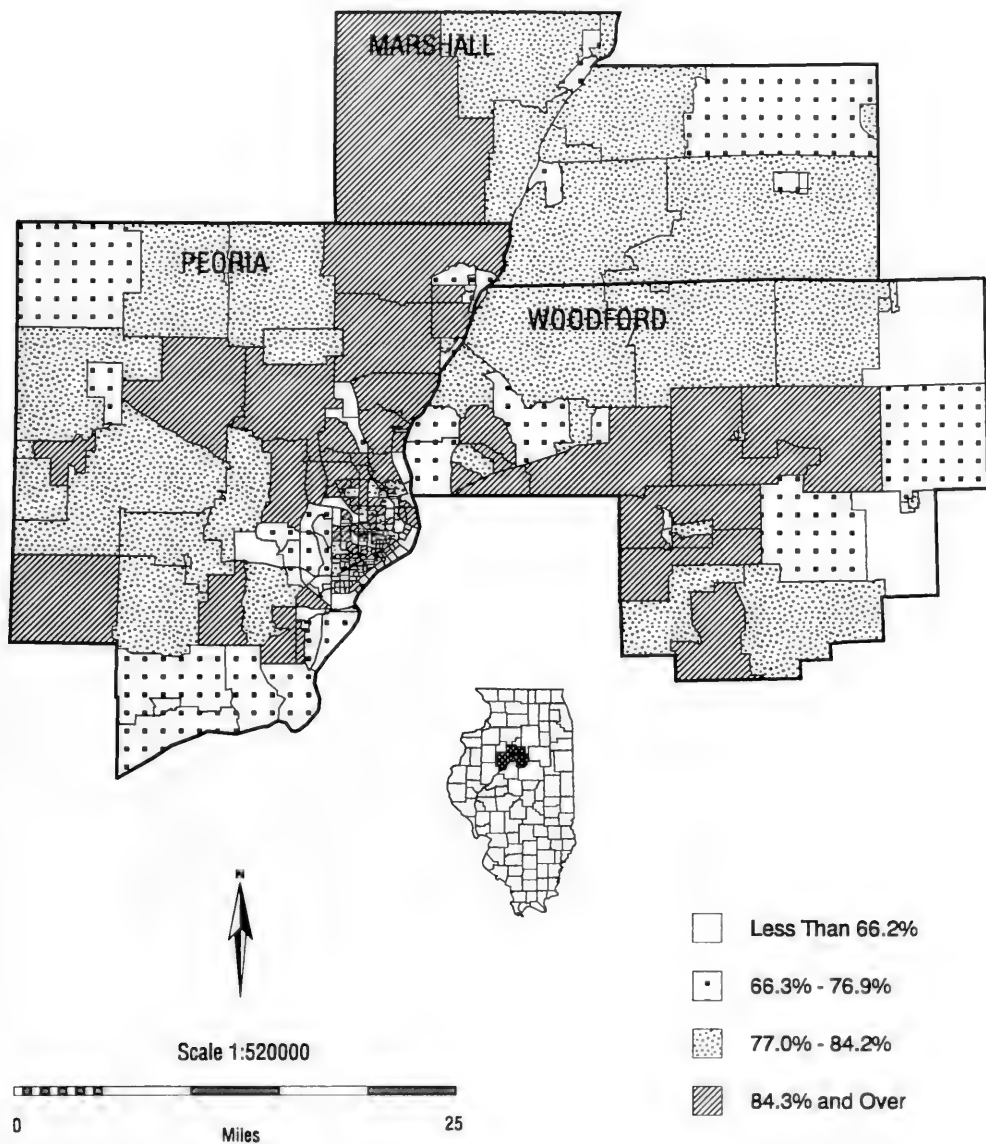
Table 1-6. 1990 Educational Attainment
(persons age 25 and over)

	Not Completing High School	Completing High School Only	Completing Four or More Years of College
Peoria	22.1%	58.5%	19.5%
Marshall	15.5%	63.5%	21.0%
Woodford	20.0%	64.6%	15.4%
Region	21.3%	60.1%	18.7%
Illinois	23.8%	55.2%	21.0%

Figure 1-7.

Educational Attainment by 1990 Census Block Group

Percentage of those over 25 who are high school graduates or higher.



Race and Gender

The area has a fairly small minority population, 12.3% in 1990, slightly less than the 17.8% minority population statewide. The amount has almost doubled since 1970, when minorities made up 6.7% of the population. Most of the area minorities live in Peoria County (15.1%). Marshall and Woodford counties have a 0.6% and 0.7% minority population, respectively.

The ratio of males to females in the area has generally been 48:52 for the past 20 years. Statewide, the proportion of males to females is 48.5:51.5.

Per Capita Income

Per capita income is slightly lower in the River Bluffs area than it is statewide; in 1990, at \$20,192, it was \$2,267 lower.⁷ From 1970-1990 per capita income rose 33% in the three-county area, with county increases ranging from 40.7% in Woodford County to 32.3% in Peoria County. In 1990, all of the counties were in the top one-third for per capita income: Peoria County ranked 14, Woodford County ranked 25, and Marshall County, 30.

The map in Figure 1-9 shows that the areas with the highest per capita income are in Peoria County, particularly in the areas north and west of the city, and in the northern and western portions of the city.

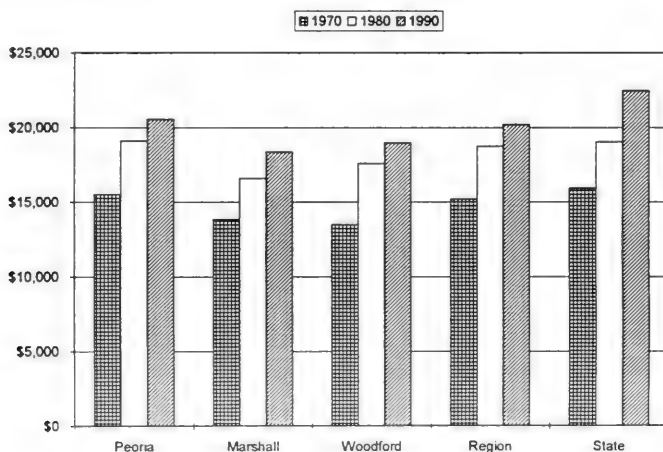
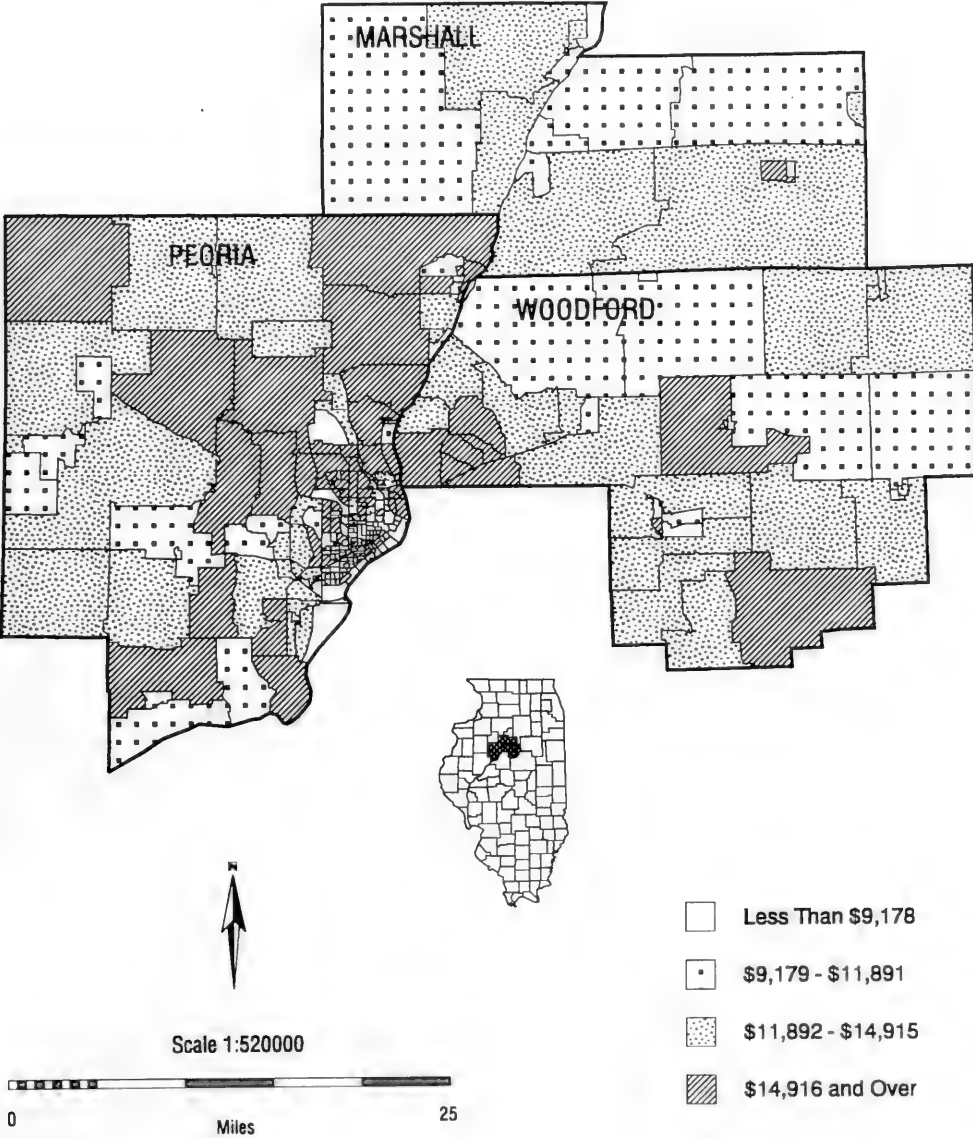


Figure 1-8. Per Capita Income

⁷ Per capita income data from 1997 State Profile.

Figure 1-9.
Per Capita Income by 1990 Census Block Group



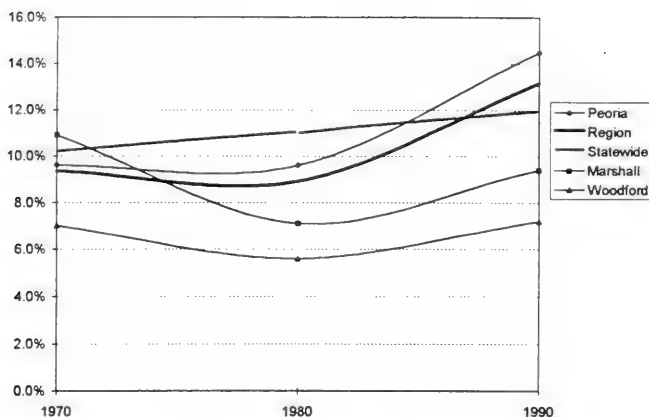


Figure 1-10. Percent of Population Living in Poverty

Because of Peoria County's high poverty rate, the River Bluffs poverty rate is slightly higher than it is statewide -- 13.2% compared to 11.9%. Between 1970 and 1990, the percentage of people living in poverty⁸ rose 40.6%. The greatest increase occurred in Peoria County, where the rate increased 51%, from 9.6% to 14.5% of the population.

Households and Housing

Households

Between 1970 and 1990, while total population fell 4%, the number of households in the three-county area increased 13.7%, compared to a 20% increase statewide. The number of persons per household dropped from 3 to 2.5 persons; statewide it dropped from 3.1 to 2.7.⁹

The greatest growth occurred in Woodford County, which added 3,040 new households, up 36% from 1970. The number of households in both Marshall and Woodford counties grew by about one-tenth.

1990
River Bluffs Area
Households: 87,330
Persons Per Household: 2.5
Median Household Income (1989): \$33,752
Housing Units: 92,460
Vacancy Rate: 5.8%
Median Value, Owner-occupied: \$55,753

⁸ Poverty data from 1970, 1980, and 1990 *Census*.

⁹ Household data from 1997 *State Profile*.

Table 1-7. Number of Households
(in thousands)

	1970	1980	1990
Peoria	64,000	73,470	70,970
Marshall	4,390	5,190	4,910
Woodford	8,410	11,160	11,450
Region	76,800	89,820	87,330
Statewide	3,525,820	4,067,870	4,208,670

Table 1-8. Median Household Income
(in 1993 Dollars)

	1979	1989	% change
Peoria	\$37,111	\$32,837	-11.5%
Marshall	\$35,181	\$30,807	-12.4%
Woodford	\$40,612	\$40,037	-1.4%
Region	\$37,469	\$33,752	-9.9%
Statewide	\$36,962	\$37,565	1.6%

Between 1979 and 1989 the median income of River Bluffs area households dropped by almost 10% (\$3,717), compared to statewide growth of 1.6% (\$603).¹⁰ Household income dropped the most in Peoria and Marshall counties.

Housing

Housing units in the area increased by 16% between 1970 and 1990, while the percentage of vacant units increased from 4.6% to 5.8% of the total. Statewide, units were up by almost one-fourth and vacancies rose from 5.4% to 6.7%. In the River Bluffs area, Woodford County experienced the greatest increase in housing units, up 37%, while the number of vacant units were up 40%.¹¹

The median value of owner-occupied housing units (in 1993 dollars) increased 4%, from \$53,857 in 1970 to \$55,753 in 1990 (compared to \$90,131 statewide).¹² However,

Table 1-9. Housing Units

	1970		1980		1990	
	Units	Vacancies	Units	Vacancies	Units	Vacancies
Peoria	66,259	4.4%	79,356	7.6%	75,211	5.9%
Marshall	4,677	6.8%	5,687	9.0%	5,317	7.8%
Woodford	8,720	4.4%	11,799	6.3%	11,932	4.5%
Region	79,656	4.6%	96,842	7.5%	92,460	5.8%
Illinois	3,703,367	5.4%	4,319,672	6.3%	4,506,275	6.7%

¹⁰ Median household income data from 1980 and 1990 *Census*.

¹¹ Housing units and vacancies from 1990 and 1993 *Illinois Statistical Abstract*.

¹² Data on median value of housing from 1970, 1980 and 1990 *Census* and 1993 *Illinois Statistical Abstract*.

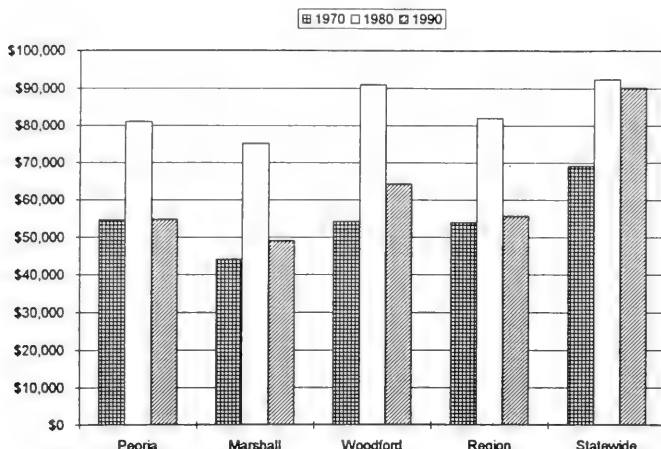


Figure 1-11. Median Value of Owner-Occupied Housing, in 1993 Dollars

values rose between 1970 and 1980, but fell significantly during the 1980s. Peoria County housing recorded no gain in value during the 20-year period, while in Woodford County it rose 19% and in Marshall County, 11%.

Conclusion

Between 1870 and 1990 the population in the River Bluffs area nearly tripled. Most of the growth occurred in Peoria County, whose population ranked tenth among Illinois counties. The area is home to 2% of the state's population. Peoria County is predominantly urban, with 84% of its population living in urban areas and 9% of its land put to urban uses. Marshall and Woodford counties are largely rural, with less than 2.5% of their land in urban use.

The age of the populace is about the same as it is statewide, with a slightly higher percentage of people age 65 and over. Marshall County ranks thirteenth in the state for percentage of elderly residents. In 1990 the median age of the area was 34 years compared to 32.8 years statewide. Between 1970 and 1990, a higher percentage of River Bluffs residents completed high school than did statewide, but fewer finished college. In 1990, 79% of all residents over 25 years of age had completed high school compared to 76% statewide, and 19% had completed college compared to 21% statewide.

In 1990 per capita income was \$20,192, \$2,267 lower than the statewide average but 33% more than in 1970. Leading the three counties was Peoria at \$20,541. During the same period, the poverty rate in the area grew 40.6%, to 13% of the population, above the

statewide rate of 12%. The rate jumped the most in Peoria County, up 51% from 9.6% to 14.5%. It dropped 14% in Marshall County, from 11% to 9.4%

Following state and national trends, the number of households grew slightly, while average household size shrank. The number of households grew the most in Woodford County, up 36%. Median household income in the area fell 10% between 1979 and 1989 (to \$33,752 from \$37,469), with most of the decrease occurring in Peoria and Marshall counties.

Health Trends

The most commonly used measure of a population's health is the mortality rate -- the number of deaths per 100,000 people. Mortality rates are provided for total deaths and by cause of death. Other measures of health are infant mortality rates and premature births, the number of teenage and single mothers, and access to health care, measured by the number of hospital beds and doctors per 100,000 people. Health is typically influenced by the demographics and economics of the region, as well as by environmental quality.

Mortality Rates¹

The mortality rate in the three-county Illinois River Bluffs area is about 5% above the state average.² The area rate has been above the state average except from 1965-69 and 1975-79. It is dictated by mortality in Peoria County, where 80% of the area population is located. In 1994, the Peoria County rate was 947 deaths per 100,000 (5% above state average), compared to the Marshall County rate of 1,171 (30% above the state average) and the Woodford County rate of 851 (5% below the state average).

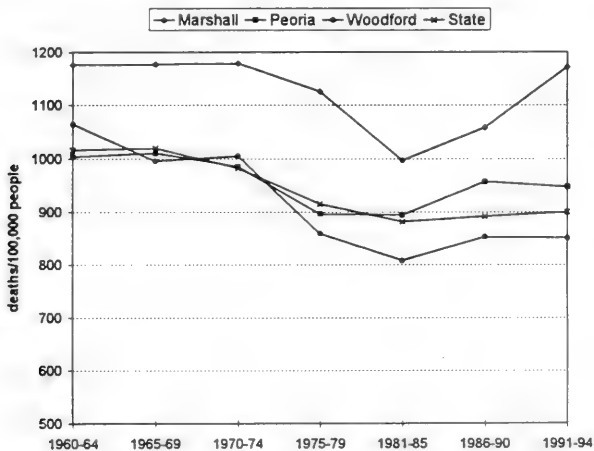


Figure 1-12. Total Mortality Rate

¹ Mortality rate data is from Illinois Department of Public Health: Division of Health Statistics, *Vital Statistics Illinois*, various years.

² In the discussion of the mortality rates, references to a mortality rate for a particular year is actually a five-year average rate. For example, when citing the 1960 mortality rate it is in fact the 1960-64 average mortality rate.

Table 1-10. Mortality Rates
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90	1991-94
Marshall	1,176	1,177	1,179	1,126	997	1,059	1,171
Peoria	1,003	1,010	985	897	895	957	947
Woodford	1,065	995	1,005	859	808	853	851
Illinois River Bluffs	1,020	1,018	999	905	889	948	946
State	1,016	1,020	983	915	882	892	900

The area mortality rate dropped 13% between 1960 and 1985, but has increased 6% sincethen. Overall, the rate was 7% lower in 1994 than it was in 1960, while statewide it was 11% lower. Within the Illinois River Bluffs area, the rate decreased 13% in Marshall County, 6% in Peoria County, and 20% in Woodford County.

The higher mortality rate in the area compared to the state reflects in part the difference in demographic characteristics. For example, the Illinois River Bluffs area has a higher elderly population than does the state as a whole. The elderly population has been shown to be positively correlated with mortality rates. Demographics also help to explain some of the differences in health within the region. Mortality rates are generally lower in Woodford and Peoria counties because the elderly population is 26% smaller than in Woodford County. However, the higher stroke mortality in Peoria County may be due to its relatively large African-American population.

Major Causes of Death

The three major causes of death, in descending order, are heart disease, cancer, and stroke. During the 1991-1994 time period they accounted for more than 64% of all deaths statewide and in the Illinois River Bluffs area. Deaths from both heart disease and stroke

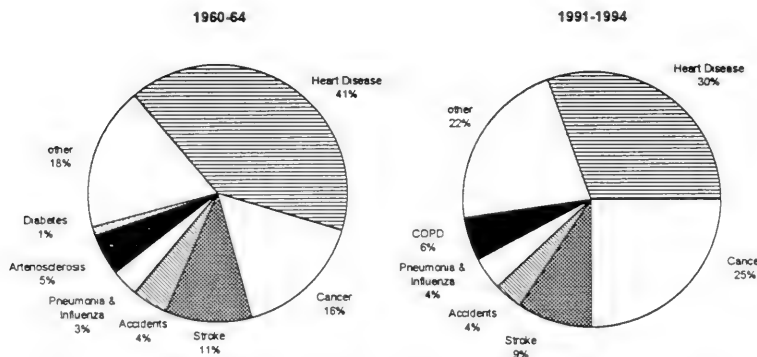


Figure 1-13. The Major Causes of Death in the Illinois River Bluffs Area

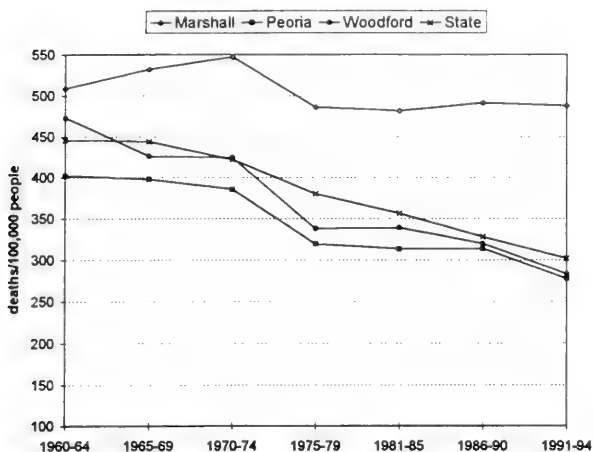


Figure 1-14. Heart Disease Mortality

have declined in the state and the Illinois River Bluffs area since 1960, while deaths from cancer have risen considerably.

Heart Disease

In 1994 the mortality rate from heart disease was 4% lower in the Illinois River Bluffs area than statewide, 290 deaths per 100,000 compared to 302. There is a considerable difference in the heart disease mortality rate within the region; in Peoria County it was 8% below the state average in 1994, compared to 61% above the state average in Marshall County.

Since 1960 the heart disease mortality rate has declined in the Illinois River Bluffs area at about the same pace as the state rate -- 30% compared to 32%. The rate fell the most in Woodford County (40%).

Table 1-11. Heart Disease Mortality
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90	1991-94
Marshall	509	532	547	486	481	491	487
Peoria	402	398	386	320	314	314	277
Woodford	473	427	425	338	339	320	283
Illinois River Bluffs	416	408	400	331	327	325	290
State	446	444	422	381	357	328	302

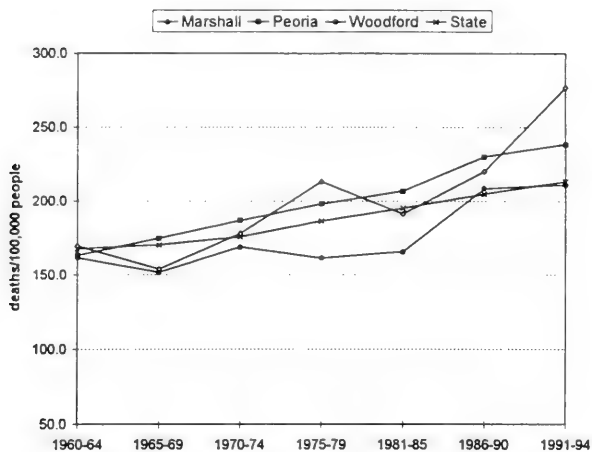


Figure 1-15. Cancer Mortality

Cancer

Since 1965, the cancer mortality rate in the Illinois River Bluffs area has been above the state rate; in 1994 the rate was 237 deaths per 100,000 population, compared to 213 statewide. The highest rate was in Marshall County where it was 30% higher than the state rate, while the lowest rate was in Woodford County with a rate 1% lower than the state's.

The area's cancer mortality rate has increased at a greater pace than it has statewide -- up 45% compared to 27% statewide.

Table 1-12. Cancer Mortality
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90	1991-94
Marshall	170	154	178	213	191	220	277
Peoria	163	175	187	198	207	230	238
Woodford	162	151	169	161	166	209	211
Illinois River Bluffs	163	171	184	195	200	226	237
State	168	170	176	187	195	205	213

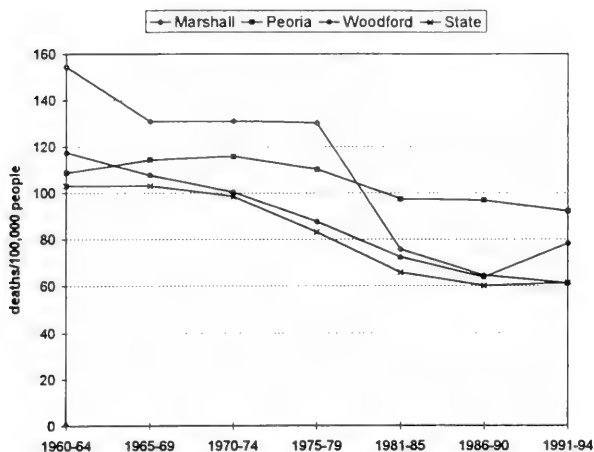


Figure 1-16. Stroke Mortality

Stroke

Stroke mortality has dropped dramatically since 1960 -- 21% in the Illinois River Bluffs area and 41% statewide. The most significant decline in the area was in Marshall County, where the rate fell 61%.

The death rate from stroke has been consistently higher in the Illinois River Bluffs area than in the state. In 1994 it was 44% above the state average. Peoria County had the highest stroke mortality, with 92 deaths per 100,000 people.

Table 1-13. Stroke Mortality
(deaths per 100,000 people)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90	1991-94
Marshall	155	131	131	130	76	65	61
Peoria	109	114	116	110	97	97	92
Woodford	118	108	100	88	72	64	78
Illinois River Bluffs	112	114	115	109	93	90	88
State	103	103	98	83	66	60	61

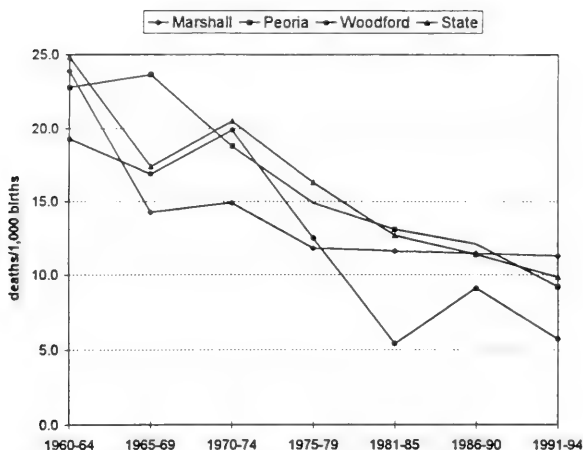


Figure 1-17. Infant Mortality

Infant Mortality and Premature Births³

Another measure of community health is the infant mortality rate, which has typically been slightly lower in the Illinois River Bluffs area than it has statewide. In 1994, there were 9 deaths per 100,000 population in the area (9% below the state average).

Infant mortality has been declining at a steady rate since 1960, down 60% both statewide and in the area. The Illinois River Bluffs area had an 8% higher percentage of premature

Table 1-14. Infant Mortality
(deaths per 100,000 population)

	1960-64	1965-69	1970-74	1975-79	1981-85	1986-90	1991-94
Marshall	23.9	14.3	14.9	11.8	11.6	11.5	11.3
Peoria	22.8	23.6	18.8	14.9	13.1	12.1	9.2
Woodford	19.3	16.9	19.9	12.5	5.4	9.1	5.7
Illinois River Bluffs	22.5	22.5	18.7	14.4	12.1	11.7	8.9
State	24.5	24.1	20.5	16.3	12.7	11.4	9.8

³ This data is from Illinois Department of Public Health: Division of Health Statistics, *Vital Statistics Illinois*, various years.

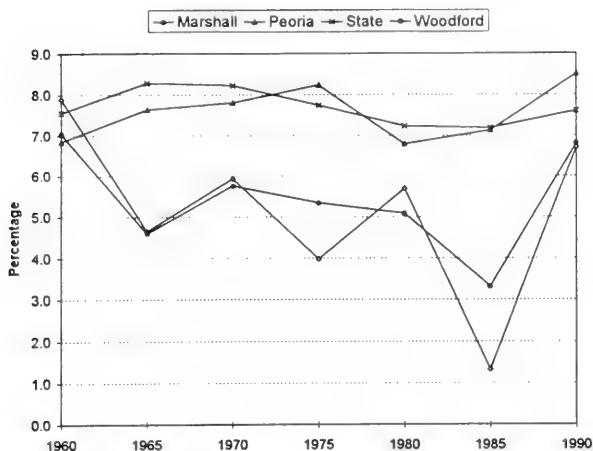


Figure 1-18. Premature Births as a Percentage of Total Births

births (Figure 1-18) than the state in 1990.⁴ Within the Illinois River Bluffs area the premature birth rates are typically lowest in Marshall and Woodford counties, both below the state average. On the other hand, the percentage of premature births was 12% higher than the state in Peoria County.

The premature birth rate has varied more in the Illinois River Bluffs area than it has statewide. It increased 12% from 1960 to 1975, dropped 17% from 1975-85, but increased again (28%) since then.

Table 1-15. Percentage of Premature Births

	1960	1965	1970	1975	1980	1985	1990
Marshall	7.9	4.7	5.9	4.0	5.7	1.3	6.7
Peoria	6.8	7.6	7.8	8.2	6.8	7.1	8.5
Woodford	7.0	4.6	5.8	5.3	5.1	3.3	6.8
Illinois River Bluffs	6.9	7.2	7.5	7.7	6.5	6.4	8.2
State	7.6	8.3	8.2	7.7	7.2	7.2	7.6

⁴ From 1960-85, the Illinois Department of Public Health defined premature births (in the *Vital Statistics of Illinois*) as babies born at a weight less than 2501 grams. In 1990, the *Vital Statistics Report* included the number of babies at less than 2599 grams.

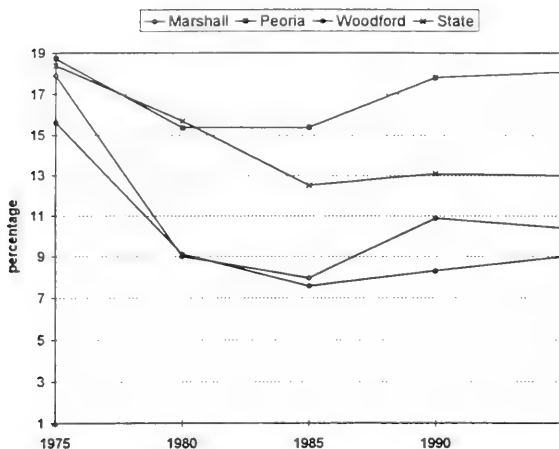


Figure 1-19. Percentage of Births to Teenage Mothers

Teenage and Single Mothers⁵

The rates of infant mortality and premature births are influenced by the number of teenage and single mothers who often have less income and, therefore, less access to health care.

Between 1975 and 1994 the teen birth rate declined both statewide and in the three counties -- about 29% in the state, and 9% in the Illinois River Bluffs area. The rate has fallen over 40% in Marshall and Woodford counties, but only 3% in Peoria County. However, the rate has increased 18% in the area since the low point of 14.1% in 1985.

Table 1-16. Percentage of Births to Teenage Mothers

	1975	1980	1985	1990	1994
Marshall	17.9	9.0	8.0	10.9	10.4
Peoria	18.7	15.4	15.4	17.8	18.1
Woodford	15.6	9.1	7.6	8.3	9.0
River Bluffs	18.3	14.2	14.1	16.3	16.6
State	18.4	15.7	12.5	13.1	13.0

Table 1-17. Percentage of Births to Single Mothers

	1975	1980	1985	1990
Marshall	5.0	2.8	8.6	20.0
Peoria	15.6	21.7	30.5	39.6
Woodford	5.1	5.8	5.4	13.8
River Bluffs	13.7	18.6	26.4	35.5
State	17.1	22.5	25.7	31.7

⁵ This data is from Illinois Department of Public Health: Division of Health Statistics, *Vital Statistics Illinois*, various years.

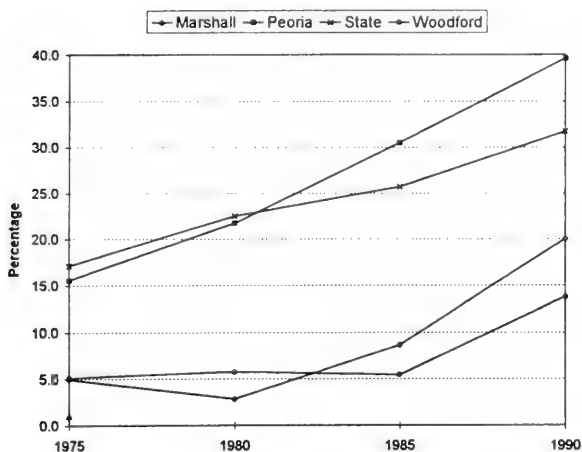


Figure 1-20. Percentage of Births to Single Mothers

The area's teen birth rate was 28% higher than statewide in 1994.

Though the percentage of births to teenage mothers is lower than 1975, the percentage of births to single mothers has increased steadily. It jumped 85% statewide and 159% in the Illinois River Bluffs area. The area rate was 12% above the state average in 1990.

Health Care Access

A key aspect of health is the availability of health care providers and facilities, specifically the number of doctors and staffed hospital beds. The Illinois River Bluffs area has more hospital beds and doctors per 100,000 people than the state average. In 1994, the number

Table 1-18. Hospitals in the Illinois River Bluffs Region (1994)

	City	Staffed Beds
George A. Zeller Mental Health Center	Peoria	154
Methodist Medical Center of Illinois	Peoria	346
Proctor Hospital	Peoria	185
Saint Francis Medical Center	Peoria	560

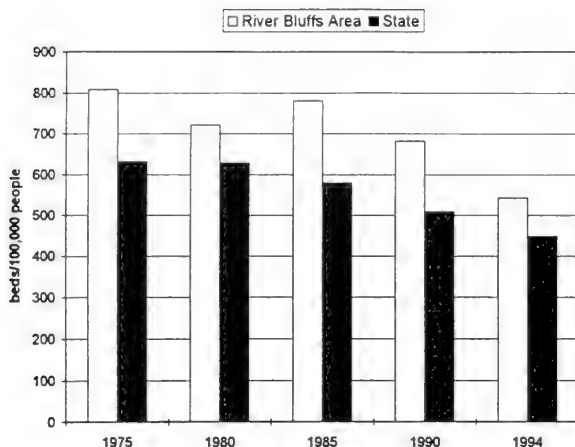


Figure 1-21. Staffed Hospital Beds (Per 100,000 People)

of beds per 100,000 people was 21% more than statewide, with all the beds located in four Peoria hospitals.

The Illinois River Bluffs area also has more doctors per 100,000 people than did the state. In 1994, there were 281 doctors per 100,000 people, 23% above the state average of 229. There is a large variance within the region: Marshall and Woodford counties had only 56 doctors per 100,000 people, while Peoria County had 338 doctors per 100,000 people.

Table 1-19. Number of Staffed Hospital Beds⁶
(per 100,000 people)

	1975	1980	1985	1990	1994
Marshall	0	0	0	0	0
Peoria	960	873	954	833	681
Woodford	143	119	107	104	0
River Bluffs	808	721	780	681	543
State	631	628	579	507	447

⁶ Data on number of hospital beds is from the Illinois Hospital & Health Systems Association.

Table 1-20. Number of Doctors
(per 100,000 Population)⁷

	1975	1980	1985	1990	1994
Marshall	76	41	44	47	56
Peoria	198	243	281	328	338
Woodford	37	30	58	46	56
River Bluffs	172	203	236	272	281
State	160	172	205	225	229

In both the Illinois River Bluffs area and statewide, trends in health care availability have been toward more doctors and fewer hospital beds. Figures 1-21 and 1-22 show that since 1975 the number of staffed hospital beds has declined 29% statewide while the number of doctors has increased about 43%. In the Illinois River Bluffs area there are 33% fewer hospital beds and 63% more doctors since 1975.

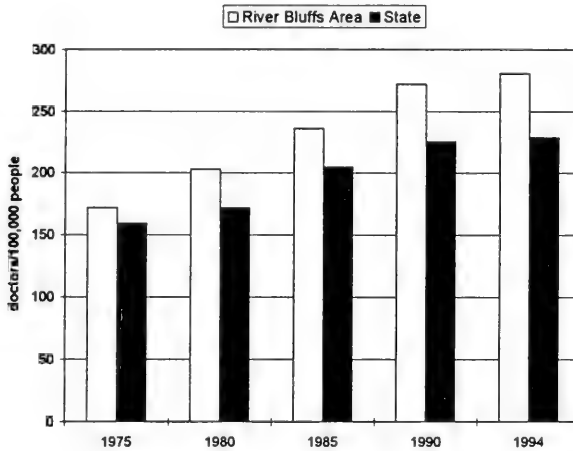


Figure 1-22. Number of Doctors Per 100,000 People

⁷ Data on number of doctors is from the Illinois Department of Professional Regulation.

Conclusion

The total mortality rate has declined in Illinois and in the Illinois River Bluffs area. Infant mortality and mortality rates for heart disease and stroke have declined in both the area and the state, while cancer mortality has increased significantly. Total mortality rates in Marshall County have consistently been above the state average, while they are closer to the state average in Peoria and Woodford counties.

The percentage of births to teenage mothers declined in both the Illinois River Bluffs area and the state, but has increased recently, while the percentage of births to single mothers rose significantly. With respect to health care availability, the area is above the state average in staffed hospital beds per 100,000 people and in number of doctors per 100,000 people.

The Regional Economy

In 1994, the Illinois River Bluffs area had nearly 136,000 people employed with \$5.0 billion total personal income.¹ Peoria County accounted for more than 80 percent of both employment and income.

During the period 1970-1994, Woodford County experienced much higher employment growth (1.7%) than did the state (1.1%), while Peoria and Marshall counties experienced slower employment growth, 0.4% and 0.9% respectively. In each of the three counties, total personal income grew at a faster rate than did employment. Growth averaged 2.4% annually in Woodford County, well above the 1.8% statewide. Meanwhile, Peoria and Marshall counties saw increases over the period of 1.1% annually.

Figure 1-24 shows that manufacturing is a significant employer in Peoria and Marshall counties and, to a smaller extent, in Woodford County. In Peoria County, manufacturing areas are found south and north of the city of Peoria, with the northern area contiguous

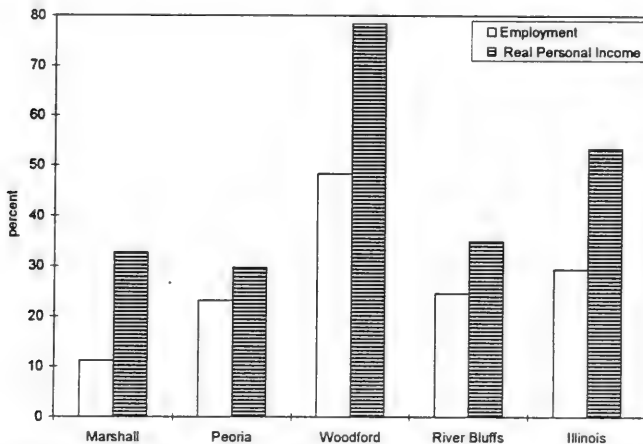


Figure 1-23. Changes in Employment and Personal Income, 1970-1994

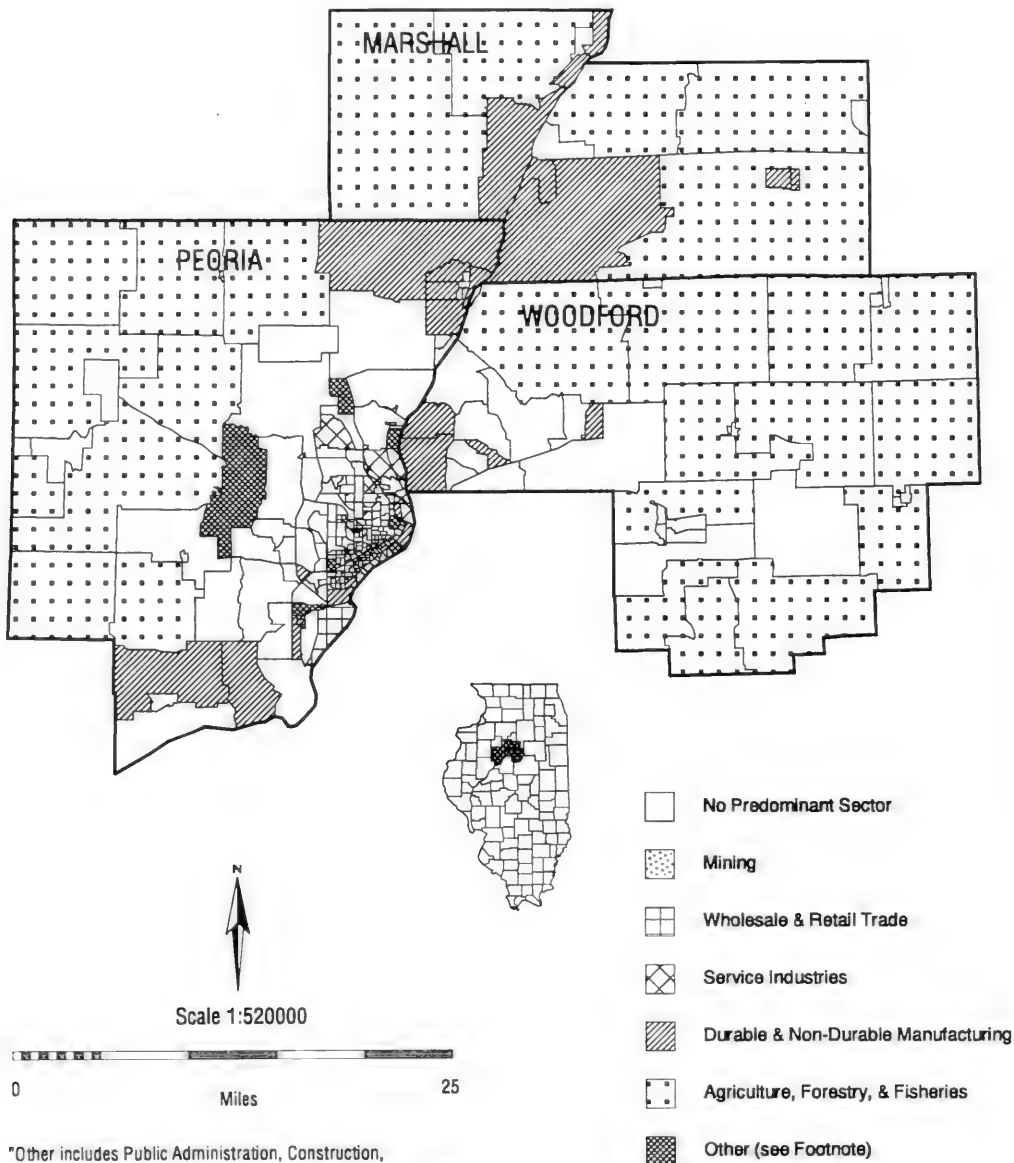
¹ Income and earnings discussed in this chapter are reported in 1994 dollars. Total personal income includes the earnings (wages and salaries, other labor income, and proprietor's income); dividends, interest, and rent; and transfer payments received by the residents of the area.

Source: Regional Economic Information System, 1969-1994, US Department of Commerce, Bureau of Economic Analysis.

Figure 1-24.

Significant Employment Sectors by 1990 Census Block Group

Significant is defined as greater than one standard deviation above the mean percentage for the 3-county region.



*Other includes Public Administration, Construction, Transportation, and Communications and Other Public Utilities

Table 1-21. 1994 Employment and Personal Income

	Employment	% of Illinois Employment	Income (million \$)	% of Illinois Income
Marshall	5,238	0.1	249.4	0.1
Peoria	118,608	1.8	4,027.9	1.5
Woodford	12,098	0.2	688.4	0.2
Illinois River Bluffs	135,944	2.0	4,965.7	1.8
Illinois	6,648,279	100	277,473.6	100

with the manufacturing area of Marshall County. The map's "other" category — public administration, construction, transportation, communications, and other public utilities — is significant in central Peoria County as well as in pockets within the city of Peoria. Agriculture is the other main employer in the three counties.

Table 1-22 shows that Peoria County has a negative residence adjustment added to its personal income.² This means that residents from neighboring counties commute to Peoria County for employment; 13% of Peoria County earnings were generated by residents from other counties. In Marshall and Woodford counties, workers commute to other counties, as reflected by the positive adjustments.

Structural Change in the Economy

Since the early 1970s, the economy of the Illinois River Bluffs area, as in Illinois and the U.S., has changed steadily from a manufacturing base to a more service-related economy, e.g., business, health, educational services, communications, and wholesale/retail trade. However, manufacturing earnings still represent more than 20% of total area earnings.

Table 1-22. Composition of Total Personal Income (1994)
(in millions)

	Marshall	Peoria	Woodford	River Bluffs	Illinois
Earnings	105.9	3,177.6	259.0	3,542.5	205,805
less contributions	7.5	231.8	17.5	265.8	14,579
plus residence adjust.	51.3	-344.3	239.3	-53.7	- 323
Adjusted Earnings	149.7	2,601.5	480.8	3,232.0	190,903
Div., Int., & Rent	52.6	733.5	116.6	902.7	45,069
Transfer Payments	47.1	692.9	91.0	826.0	41,502
Total Personal Income	249.4	4,027.9	688.4	4,965.7	277,474

² Adjustments are made in earnings to transfer 'place-of-work' income to 'place-of-residence' income. A negative adjustment means that more people commute to the county for work; a positive adjustment means that more people commute out of the county.

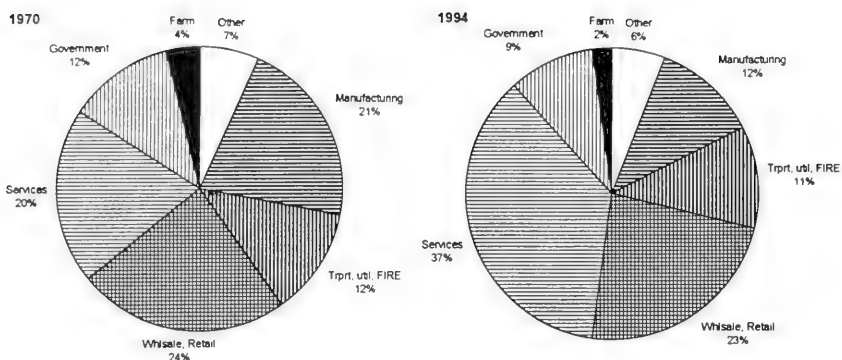


Figure 1-25. Employment Distribution in the River Bluffs Area, 1970 and 1994
 ("other" in the charts includes construction, mining, and agricultural and forestry services)

In the area, employment levels in manufacturing, services, and wholesale/retail were similar in 1970. However, by 1994, service employment had doubled, while manufacturing employment had declined and wholesale/retail grew moderately.

Over the 24-year period, manufacturing's share of employment in the area fell from 21% to 12%; its share of earnings declined from 29% to 22%. Services employment grew 3.5% annually and by 1994 was the largest sector in the area with 37% of employment and 31% of earnings, the highest in the area. Government and farm employment declined slightly over the period, while the remaining sectors experienced moderate growth.

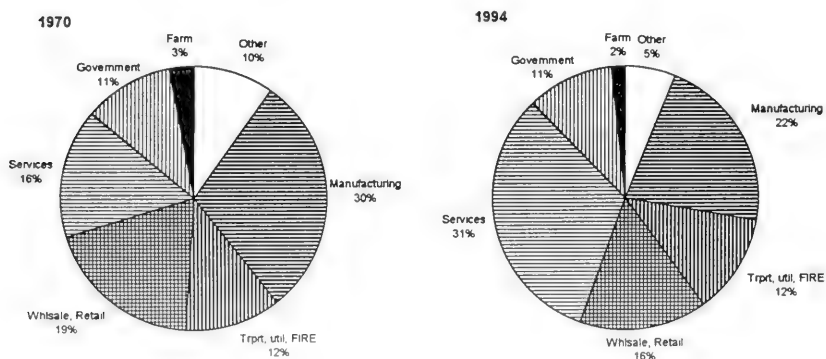


Figure 1-26. Earnings Distribution in the River Bluffs Area, 1970 and 1994

Wholesale/retail is the second largest employer, but earnings remained flat and employment grew moderately — employment increased 21% and earnings declined 1.0% between 1970 and 1994.

In 1994, only 3,082 people worked in the farming sector, compared to a total area workforce of 136,000. Mirroring statewide farm trends, both employment and earnings declined over the period, with 1.3% and 1.7% annual declines respectively. Although the farm sector has declined over the period, farm employment and income still play a significant role in Marshall and Woodford counties.

Economic Characteristics by County

Economic development in the Illinois River Bluffs area is concentrated in the services, manufacturing, and wholesale/retail trade sectors. Business establishments are concentrated in Peoria County.

Marshall County

Marshall County, the smallest of the three counties, experienced the slowest growth between 1970 and 1994; employment increased 0.4% annually and earnings declined 0.1%. Unlike other counties, manufacturing grew in Marshall County over the 24-year

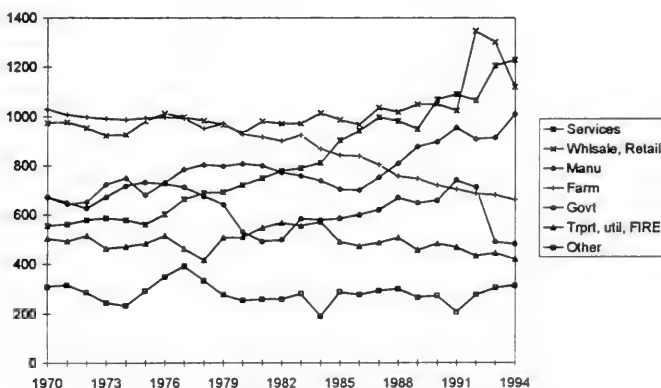


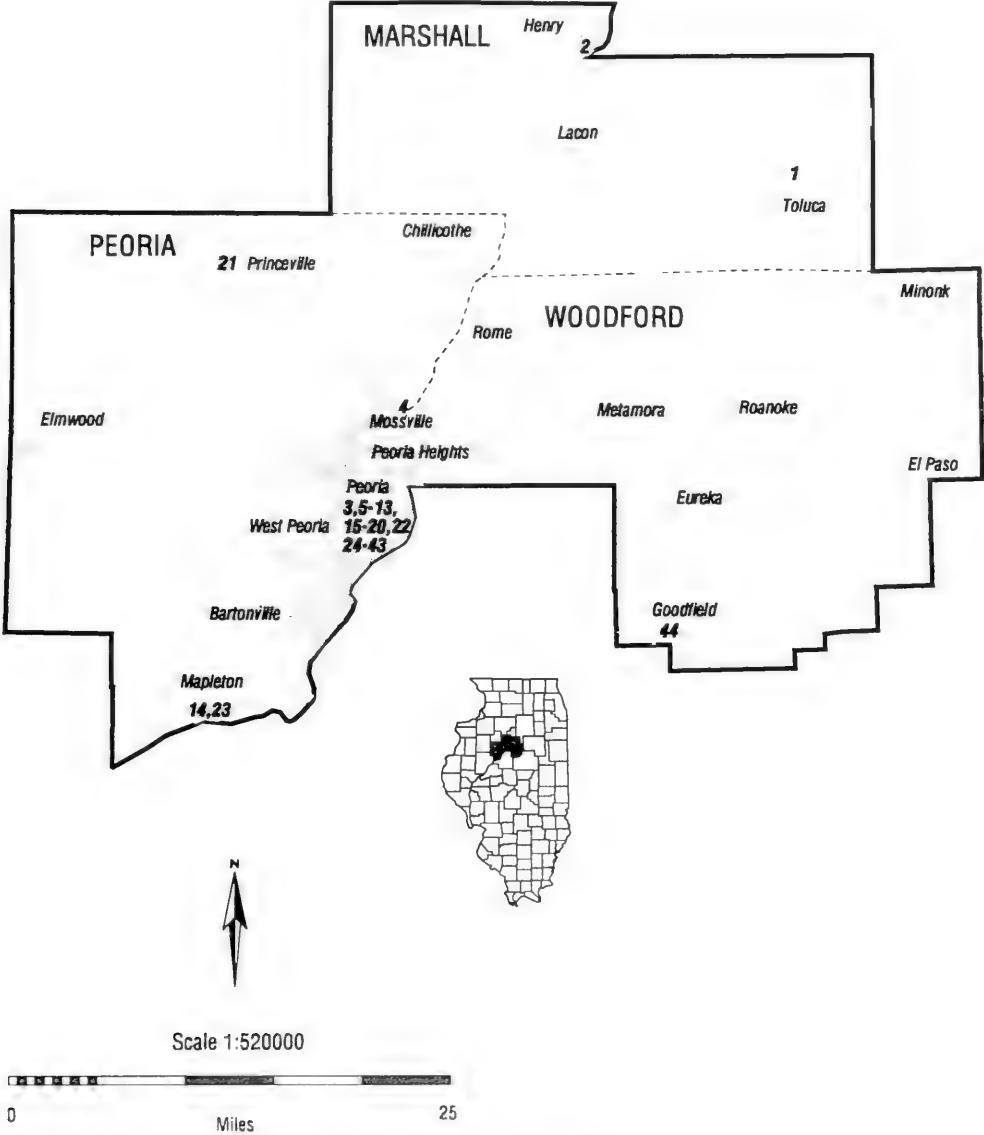
Figure 1-27. Marshall County Employment, by Sector

Table 1-23. Major Employers, Illinois River Bluffs Area

Company	City	Map Legend	Business Classification	SIC	Employees
Marshall County					
Windsor Quality Foods	Toluca	1	Frozen Specialties, nec	203	270
B.F. Goodrich Company	Henry	2	Antibiotics	283	254
Peoria County					
Caterpillar, Inc.	Peoria	3	Crushers, Grinders	353	5,700
Caterpillar, Inc.	Mossville	4	Crushers, Grinders	353	4,200
Osf Healthcare System	Peoria	5	Medical & Surgical Hospital	806	3,500
Methodist Medical Center	Peoria	6	Medical & Surgical Hospital	806	2,445
Dept. of the Air Force	Peoria	7	National Security	971	1,500
Keystone Consolidated Ind.	Peoria	8	Primary or Semi- Finished Metals	331	1,500
Proctor Hospital	Peoria	9	Medical & Surgical Hospital	806	1,040
Ill. Dept. of Military Affairs	Peoria	10	National Security	971	1,006
Bradley University	Peoria	11	Colleges & Universities	822	978
Komatsu America International	Peoria	12	Backhoes, Tractors, Cranes	353	900
Ruppman Marketing	Peoria	13	Local & Long Distance Telephones	481	800
Caterpillar, Inc. US 24	Mapleton	14	Gray & Ductile Iron Foundries	332	800
US Postal Service	Peoria	15	Post Office	431	650
Community Workshop	Peoria	16	Job Training	883	500
Peoria Journal Star	Peoria	17	Newspaper, Printing & Publishing	271	470
Multi-ad Services	Peoria	18	Newsletter Publishing	274	450
Wal-mart Stores	Peoria	19	Department Stores	531	400
Illinois Bell	Peoria	20	Local & Long Distance Telephones	481	400
Stolle Machinery	Princeville	21	Plastics, Hardware	308	400
Interstate Brands	Peoria	22	Bread, Rolls, & Buns	205	360
Witco Corporation	Mapleton	23	Soap & Detergents	284	360
Unr Industries	Peoria	24	Fabricated Structural Metal	344	350
Citizens Equity Federal	Peoria	25	Federal Credit Union	606	350
Catholic Social Services	Peoria	26	Counseling Services	832	350
Peoria County	Peoria	27	Government	922	350
Interim Healthcare	Peoria	28	Home Health Care Services	808	300
Carson, Pirie, Scott	Peoria	29	Department Store	531	300
Olsten Corporation	Peoria	30	Specialized Medical Practitioners	801	300
Ill Dept. of Human Resources	Peoria	31	Psychiatric Hospital	806	300
Spectacor Management	Peoria	32	Property Operation	651	300
State of Illinois-South Falcon	Peoria	33	National Security	971	280
Advanced Technology Services	Peoria	34	Industrial Equipment Services	769	280
Jumer's Castle Lodge	Peoria	35	Hotel	701	280
Central Illinois Light Company	Peoria	36	Electric Services	493	275
J.C. Penny Company	Peoria	37	Department Store	531	250
May Department Stores	Peoria	38	Department Store	531	250
J.W. Enterprises	Peoria	39	Books, Periodicals, & Newspapers	512	250
Peoria County	Peoria	40	Courts	922	250
Rli Insurance	Peoria	41	Fire, Marine, & Casualty Insurance	633	250
Montgomery Ward & Company	Peoria	42	Department Store	531	250
Peoria Civic Center	Peoria	43	Commercial Building	651	250
Woodford County					
Dmi Inc.	Goodfield	44	Turf & Grounds Equipment	352	400

Source: Dun and Bradstreet, Dun's Direct Access Business Database, New York, 1995

Figure 1-28.
Major Employers in the Illinois River Bluffs Area
Location of employers with more than 250 employees.



Source: Dun and Bradstreet, Dun's Direct Access Business Database, New York, 1995.

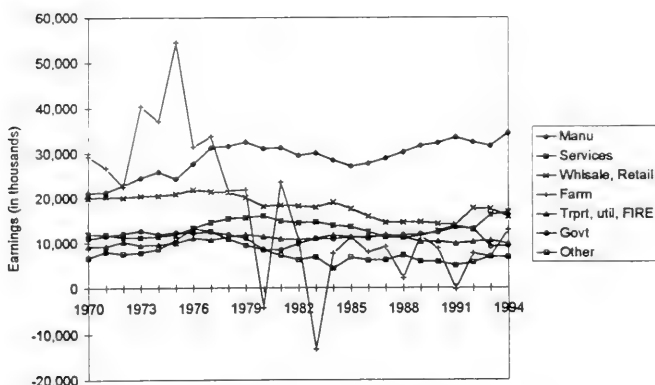


Figure 1-29. Marshall County Earnings, by Sector

period, up 50% in employment and 63% in earnings. Service employment doubled and earnings grew by half. These increases, however, could not counteract the effects of income declines in the government, wholesale/retail, and farm sectors.

In 1970, the farm sector led employment and earnings, but by 1994 was fourth in both. Manufacturing took over the lead in earnings -- \$34.5 million, one-third of county earnings -- and services led in employment.

Table 1-24. Marshall County Selected Statistics

	1994 Employment	% Change 1970-94	Average Annual Change	% of Workforce	1994 Earnings (million \$)	% Change 1970-94	Average Annual Change	% of Total Earnings
Manufacturing	1,011	50.9	1.7%	19.3	34.5	63.4	2.1%	32.6
Transportation, Utilities, FIRE	420	-16.8	-0.8%	8.0	9.8	6.8	0.3%	9.2
Wholesale, Retail	1,211	15.2	0.6%	21.4	15.9	-20.3	-0.9%	15.0
Services	1,231	121.8	3.8%	23.5	16.8	41.7	1.5%	15.9
Government	481	-28.5	-1.4%	9.2	9.4	-13.7	-0.6%	8.9
Farming	660	-35.8	-1.8%	12.6	12.9	-56.0	-3.4%	12.1
Other	314	2.0	0.1%	6.0	6.7	2.0	0.1%	6.4
TOTAL	5,238	11.2	0.4%	100.0	105.9	-2.6	-0.1%	100.0

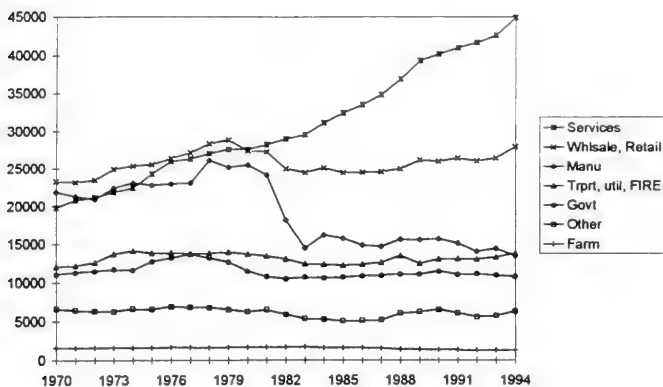


Figure 1-30. Peoria County Employment, by Sector

Peoria County

Peoria County's economy has grown slightly slower than the state's over the 24-year period; the average annual employment gain of 0.9% and the earnings rate of 0.8% were below the 1.08% and 1.8% statewide rates.

As in the state and nation, the services sector has grown in Peoria County while the manufacturing sector has declined. Manufacturing employment dropped by almost 40%, to 13,505 workers, and income fell to \$630 million by 1994. In spite of the shrinking industry as a whole, Caterpillar, a manufacturer of construction and farm equipment, dominates the county and contributes a significant amount to total sector earnings.

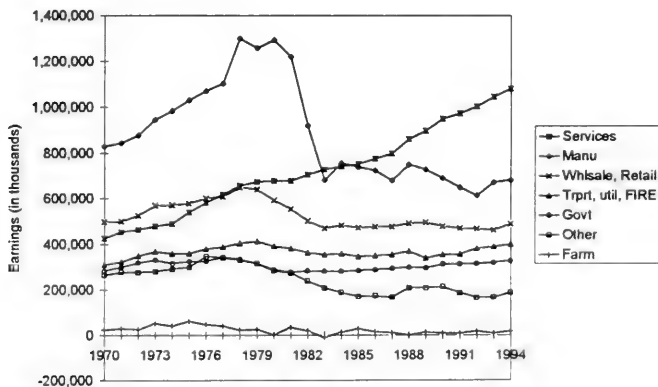


Figure 1-31. Peoria County Earnings, by Sector

Table 1-25. Peoria County Selected Statistics

	1994 Employment	% Change 1970-94	Average Annual Change	% of Workforce	1994 Earnings (million \$)	% Change 1970-94	Average Annual Change	% of Total Earnings
Manufacturing	13,505	-38.3	-2.0%	11.4	680.4	-18.0	-0.8%	21.4
Transportation, Utilities, FIRE	13,837	14.6	0.6%	11.7	399.8	28.9	1.1%	12.6
Wholesale, Retail	27,995	20.2	0.8%	23.6	488.0	-2.0	-0.1%	15.4
Services	44,976	127.2	3.5%	37.9	1,078.8	153.8	4.0%	34.0
Government	10,759	-2.6	-0.1%	9.15	328.1	16.8	0.7%	10.3
Farming	1,218	-22.2	-1.0%	1.0	15.5	-28.0	-1.4%	0.5
Other	6,318	-4.4	-0.2%	5.3	186.9	-29.1	-1.4%	5.9
TOTAL	118,608	23.2	0.8%	100.0	3,177.6	20.9	0.8%	100.0

The services sector is now the largest employer, with 44,976 employees in 1994 and \$1,079 million in earnings, up 154% over the period. Three hospitals are the largest employers in the service sector.

Woodford County

Woodford County employment grew over the 24-year period at an average annual rate of 1.7%, slightly above the state rate of 1.1%. Its earnings rate of 1.8% was the same as the state's rate.

Services and wholesale/retail led employment, growing 125% and 33% respectively over the period. Although it was only the fourth largest employer in 1994, manufacturing led earnings, at \$53 million, regaining losses it experienced in the early 1980s.

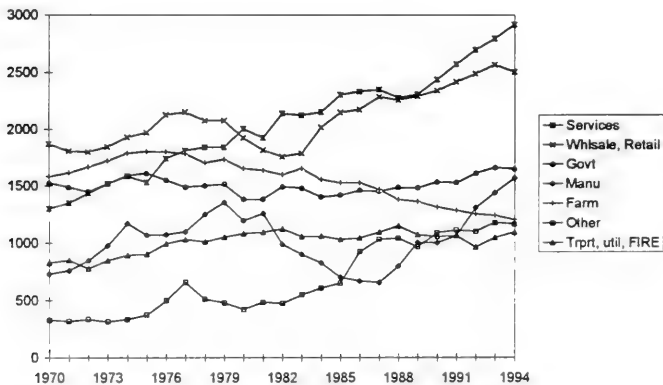


Figure 1-32. Woodford County Employment, by Sector

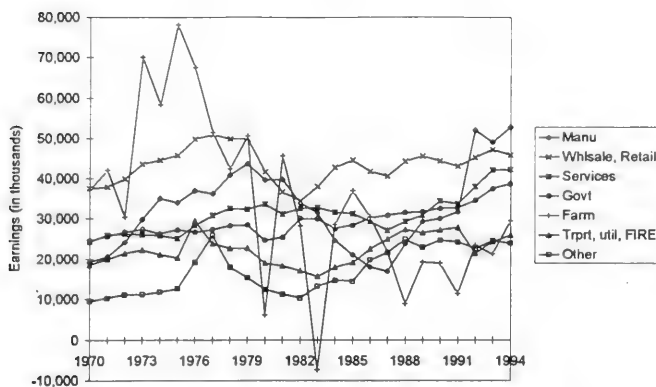


Figure 1-33. Woodford County Earnings, by Sector

In the early 1970s the farm sector was the second largest employer and the largest contributor to county income; by 1994, however, it had declined about 20%. The “other” sector — construction, mining, and agricultural and forestry services — grew rapidly, with employment increasing 258%, or 5.7% annually.

Table 1-26. Woodford County Selected Statistics

	1994 Employment	% Change 1970-94	Average Annual Change	% of Workforce	1994 Earnings (million \$)	% Change 1970-94	Average Annual Change	% of Total Earnings
Manufacturing	1,569	115.8	3.3%	13.0	52.8	175.8	4.3%	20.4
Transportation, utilities, FIRE	1,095	32.4	1.2%	9.1	25.9	41.1	1.4%	10.0
Wholesale, Retail	2,502	33.7	1.2%	20.7	45.9	22.6	0.9%	17.7
Services	2,918	125.0	3.4%	24.1	42.3	74.7	2.4%	16.3
Government	1,646	8.0	0.3%	13.6	38.7	57.9	1.9%	14.9
Farming	1,204	-23.8	-1.1%	10.	29.5	-20.7	-1.0%	11.4
Other	1,164	258.2	5.5%	9.6	23.9	153.9	4.0%	9.2
TOTAL	12,098	48.4	1.7%	100.0	259.0	52.1	1.8%	100.0

Conclusion

The economy of the Illinois River Bluffs area is dominated by Peoria County, which accounts for about nine-tenths of the area’s employment and earnings. Both Peoria and Marshall counties are growing more slowly than the statewide rate of growth, while Woodford County is growing more rapidly. Services dominate the area economy, contributing the largest share of both employment and earnings.

Agriculture

Illinois possesses some of the richest agricultural resources in the world and agriculture continues to be a key component of the state's economy and character. Information about agriculture coupled with demographic and economic information can be strong indicators of a region's development and its suitability for various resource management strategies.

Agricultural Lands

Almost 76% of the land in the Illinois River Bluffs region is considered agricultural, similar to statewide, where 77% of land is agricultural.¹ Crops are grown on the vast majority (80%) of the agricultural land. The percentage of agricultural landscape ranges from 66% in Peoria County to more than 80% in Marshall and Woodford counties.

The number of farms in the region declined 20% between 1978 and 1992, slightly less than the statewide decline of 23%. Over this same period, the amount of farm acreage also

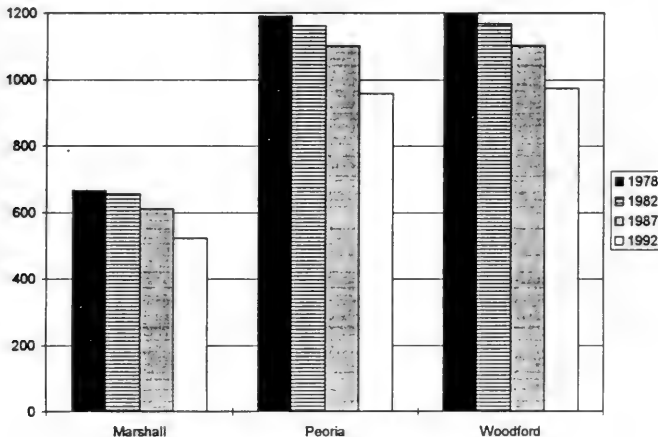


Figure 1 -34. Farms in Illinois River Bluffs Region

¹ Department of Natural Resources. *Illinois Land Cover, An Atlas*, June 1996. Agricultural land is defined as cropland (planted in row crops, small grains orchards, and nurseries) and rural grasslands (fallow fields, pasture, and greenways) and may include a small amount of non-farm grasslands.

Figure 1-35.

Agricultural Landcover

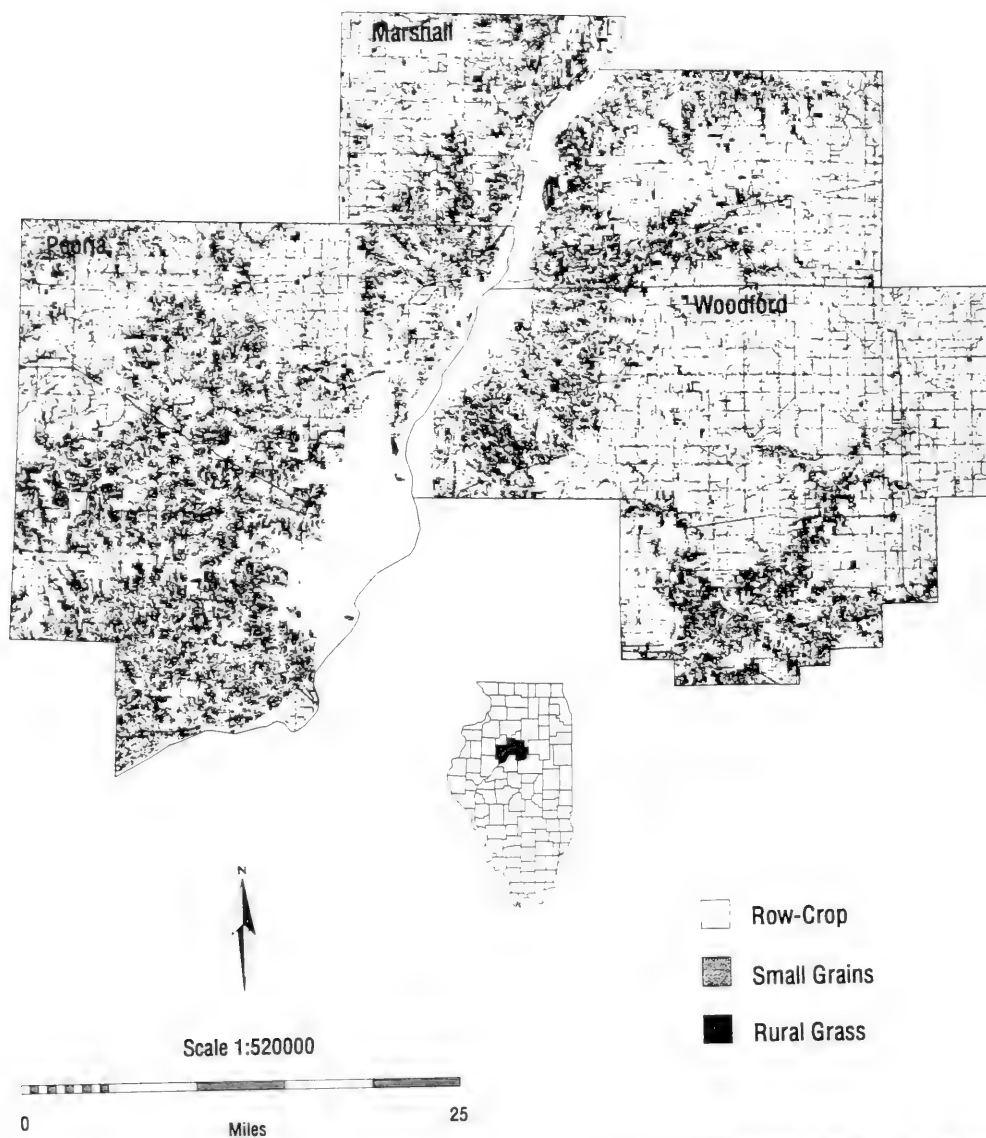


Table 1-27. Agricultural Land Cover

	Agricultural Acres	Percent of County
Marshall	209,217	82%
Peoria	267,180	66%
Woodford	287,632	83%
Region	764,029	76%
State	27,928,797	77%

declined, 6%, slightly less than the 6.5% statewide decline. Peoria County experienced the greatest drop in acreage, down 10%.²

The value of the region's agricultural land and buildings also fell between 1978 and 1992 (in 1994 dollars), although land values stabilized after 1987 on a per acre basis (Figure 1-36). Statewide, agricultural land value has remained relatively stable since 1987.

Conservation Practices

Soil erosion has long been an major issue in Illinois, but recent trends show an improvement in the number of agricultural acres meeting "T".³ Survey data show that 87% of the region's farm acreage was meeting "T" in 1997 (up from 80% in 1994), 9%

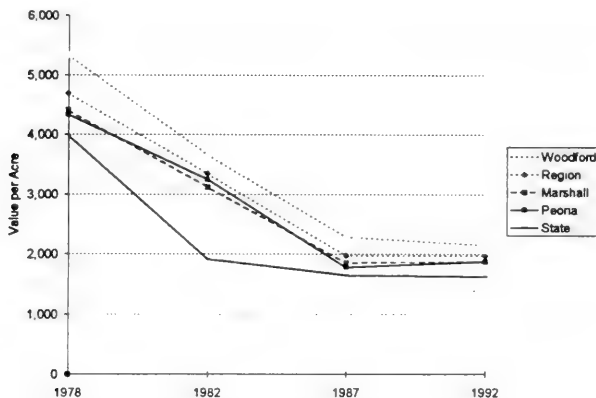


Figure 1-36. Value of Farmland (1994 dollars)

² Information taken from *Agricultural Statistics*, Illinois Department of Agriculture, various years and *Census of Agriculture*, U.S. Department of Census, 1982, 1987, and 1992.

³ "T" denotes tolerable soil loss levels, typically between three and five tons per acre per year. This is estimated--theoretically--to be the amount of soil loss than can occur and be replaced by natural soil building processes.

was between 1-2 "T" (between three and ten tons), and 3% was greater than 2 "T" (more than ten tons soil loss).⁴ This is greater than statewide, where 78% of the surveyed acreage is at "T". In the region, Woodford County leads with 90% of the surveyed acres meeting "T".

Tillage practices play a large role in achieving "T". In 1997, on a regional basis, 53% of all acres were farmed with conservation tillage methods, 25% with reduced till and 21% with conventional methods. This is higher than statewide where 43% use conservation methods, 33% use conventional methods and 22% use reduced tillage methods. (The percentage will not always total 100% since some of the survey acreage data were unavailable). Regionally, conservation tillage is used on 79% of the soybean acreage, 64% of small grain acreage, and 28% of corn acreage. As of the 1997 survey, Fulton County led with 61% of its acres planted using conservation methods.

The Conservation Reserve Program⁵ (CRP) was authorized by the Food Security Act of 1985 and amended in 1990. The Act continues to put emphasis on payments for removing highly erodible and environmentally sensitive land from production. It provides incentives and assistance to farmers to plant grass or tree cover on highly erodible land or to address other environmental concerns. A new provision of the Act also encourages farmers to enroll and restore cropped wetland acreage.⁶

Tables 1-28 and 1-29 present the number of contracts and the number of acres in the conservation reserve program per year per county, region and statewide. A farm can have more than one contract and, while contracts vary, most land is set aside for an average of ten years (totals are the sum for the period 1986-1997 and may be less as some contracts may have expired). The region has almost 1% of the state's total CRP contracts and less than 1% of the statewide acreage.

Table 1-28. Number of Conservation Reserve Contracts¹

	1986	1987	1988	1989	1991	1992	1995	1997
Marshall	4	8	6	6	14	38	16	2
Peoria	3	15	11	8	7	21	8	9
Woodford	7	24	32	24	15	21	39	24
Region	14	47	49	38	36	80	63	35
State	2,043	5,028	3,517	4,234	2,754	2,265	2,647	4,944

¹Contracts are reported during federal fiscal periods; no listing for calendar years 1993, 1994, 1996.

⁴ Data is taken from the *Illinois T by 2000 Transect Survey Summary*, by the Illinois Department of Agriculture. The survey is done in cooperation with 98 Soil and Water Conservation Districts, and the USDA Natural Resources Conservation Service.

⁵ Data provided from Lisa Manning of the Federal Farm Service Agency, Springfield IL.

⁶ United States Department of Agriculture, Farm Service Agency, *The Conservation Reserve Program*. May 1997.

Table 1-29. Number of Acres in Conservation Reserve Program¹

	1986	1987	1988	1989	1991	1992	1995	1997
Marshall	67	275	98	186	154	238	165	24
Peoria	38	387	479	137	221	564	92	86
Woodford	93	847	709	513	988	690	879	420
Region	198	1,507	1,286	836	1,363	1,492	1,137	530
State	91,015	239,729	133,910	168,812	107,832	80,852	62,037	174,421

¹ Contracts are reported during federal fiscal periods; no listing for calendar years 1993, 1994, 1996.

Agricultural Cash Receipts and Production

Total Cash Receipts

Between 1980 and 1994, farm cash receipts⁷ (the amount received from the sale of crops and livestock) varied due to market prices, weather, and acres planted, but declined overall. In 1994, total receipts for the Illinois River Bluffs area represented 3% of Illinois farm receipts.

Woodford County leads the area with \$106 million in 1994, Peoria County had \$79 million and Marshall County had \$64 million. Of the region's total receipts, 80% were from crops and 20% were from livestock.

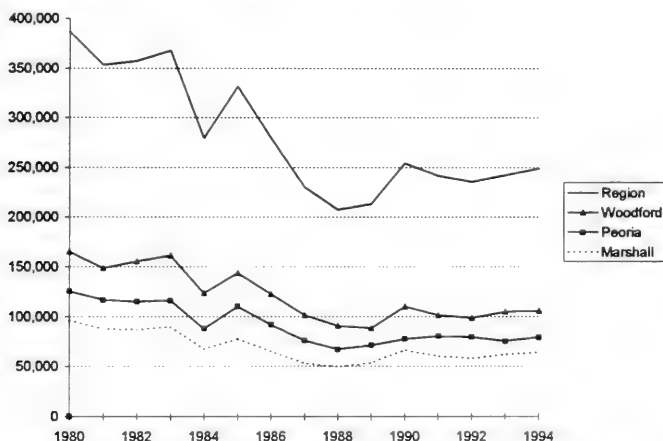


Figure 1-37. Illinois River Bluffs Region Total Cash Receipts (1994 dollars)

⁷ Dollars are adjusted to 1994

Crop Cash Receipts

In recent years, the region's crop receipts (five-year average) were \$182 million, or about 3% of the state's \$5.9 billion total crop receipts.⁸ Crop receipts include the sale of corn, soybeans, wheat and 'other' crops such as sweet corn, other vegetables, melons, and other fruits.

Similar to statewide, corn brings in more receipts than soybeans in the area, 53% of the total compared to 41%. Woodford County contributes 38% of the region's crop receipts while Peoria County accounts for 34% and Marshall the remaining 28%. The major contributors to receipts in all three counties were corn and soybeans.

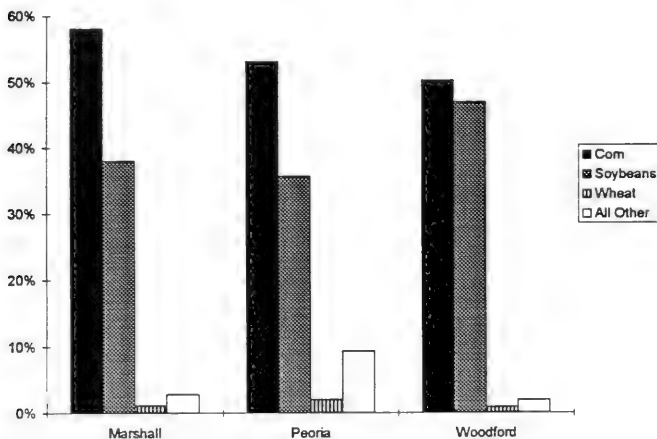
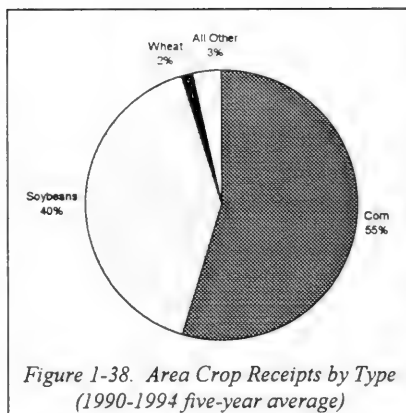


Figure 1-39. Percent of Crop Cash Receipts by Type (1990-1994 five-year average)

⁸ Due to fluctuations in seasonal production, comparisons are based on a five-year average from 1990-1994. This average was calculated for both crop and livestock cash receipts and is often used instead of the last year of data (1994).

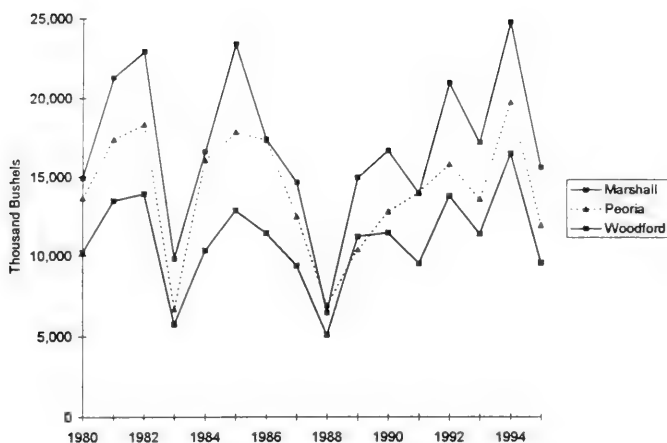


Figure 1-40. Illinois River Bluffs Region Corn Production

Crop Production

Production of both corn and soybeans fluctuated significantly between 1980 and 1995 due to factors such as weather and market price. Regional corn production ranged from 18 million bushels during the dry year of 1988 to a high of 61 million bushels in 1994. Woodford and Peoria counties are the region's largest corn producers.

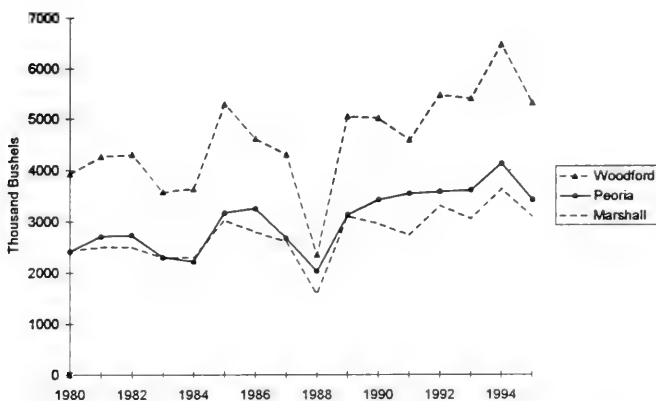


Figure 1-41. Illinois River Bluffs Region Soybean Production

Table 1-30. Farms and Acreage Planted in Vegetables, Sweet Corn or Melons, 1992

	Farms	Acres
Marshall	17	1,684
Peoria	25	961
Woodford	18	414
Region	60	3,059
State	1,714	97,197

Regionally soybean production hit a low of 5.9 million bushels in 1988 and a high of 14 million bushels in 1994. Woodford County is also the region's leading soybean producer.

Area farmers also planted wheat, hay, and oats, although at somewhat lower production rates. Wheat production contributed 1% of the region's crop receipts and 'other' crops contributed 5%. The region has about 4% of the total number of statewide farms reporting production of vegetables, sweet corn or melons.

Livestock Cash Receipts

The Illinois River Bluffs region contributes \$63 million (2.6%) of the state's \$2.4 billion livestock cash receipts.⁹ Livestock receipts come from the sale of cattle, hogs, and 'other' livestock such as, dairy cattle, poultry, and sheep. Statewide, hogs provide 48% of livestock cash receipts, cattle provide 32% and 'other' livestock, 20%.

Regionally, hogs provide 59%, cattle 29%, and 'other' livestock 13% of the receipts. Woodford County has the highest livestock receipts, averaging \$35 million, and produces 39% of the region's cattle receipts and 65% of the hog receipts. Woodford County also contributed the majority (53%) of the region's 'other' livestock cash receipts.

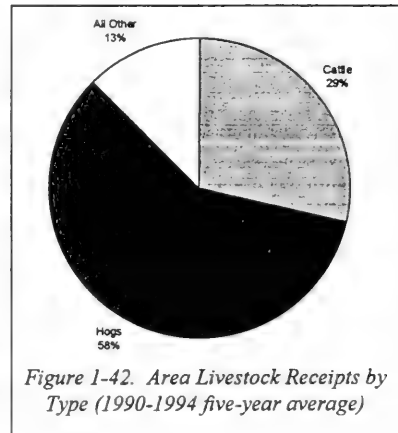


Figure 1-42. Area Livestock Receipts by Type (1990-1994 five-year average)

⁹ Due to fluctuations in seasonal production, comparisons are based on a five year average from 1990-1994. This average was calculated for both crop and livestock cash receipts and is often used instead of the last year of data or 1994.

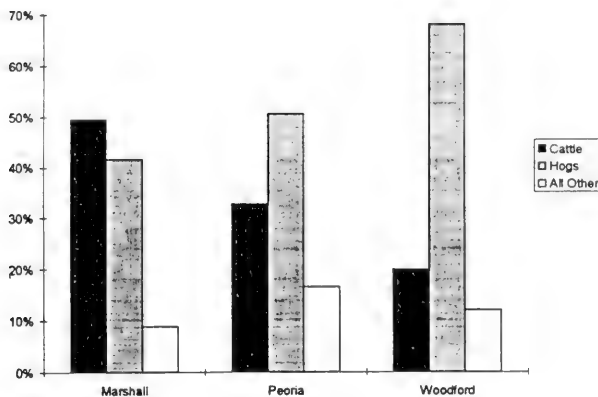


Figure 1-43. County Livestock Receipts by Type
(1990-1994 five-year average)

Livestock Production

The region's livestock inventory accounts for 2.3% of cattle statewide and 3% of hogs. The average inventory between 1990 and 1995 was 173,000 hogs and 46,000 head of cattle with Woodford County, on average, leading in both. Since the mid 1980's, the number of cattle declined in the region while, the hog inventory increased (primarily in Woodford County).

Production estimates are not available for the 'other' category.

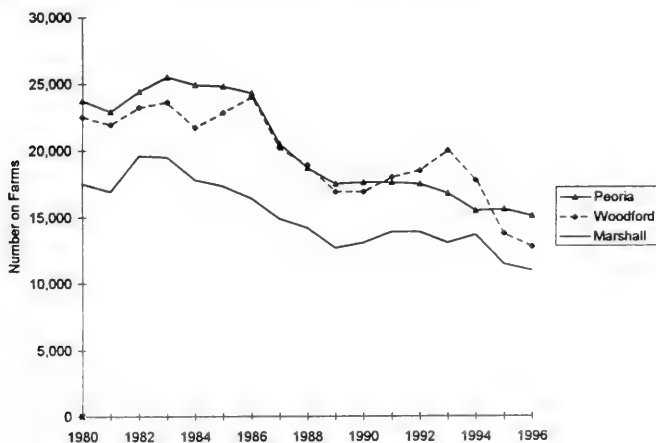


Figure 1-44. Cattle Inventory

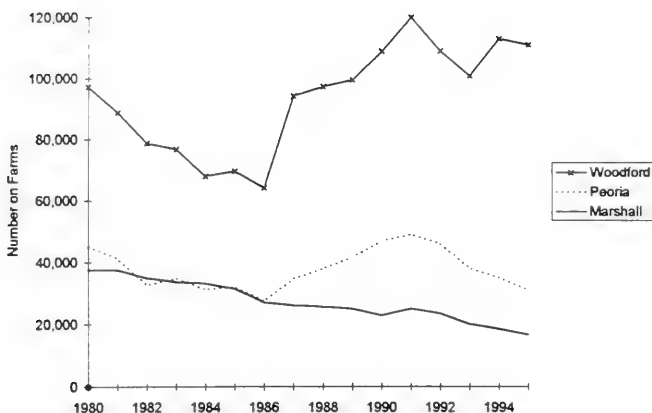


Figure 1-45. Hogs and Pigs Inventory

Conclusion

Agriculture in the Illinois River Bluffs region produces corn, beans, hogs, and cattle. From 1990 through 1994, the region averaged \$182 million in annual crop cash receipts and \$63 million in livestock receipts. The value of area farms is greater than the statewide average, but as in the rest of the state, the number of farms is declining.

Highlights of the region's agriculture include: 61 million bushels of corn and 14 million bushels of soybean in 1994; an annual average (1990-95) inventory of 173 thousand hogs and 46 thousand head of cattle.

Outdoor Recreation

The Illinois River dramatically affects the scope and scale of the River Bluffs area outdoor recreation opportunities. The river cuts the bluffs that contribute to the scenery, feeds the backwater lakes that attract migratory birds (as well as boating and fishing enthusiasts), and provides the backdrop for two notable state-owned recreation sites.¹

State-Owned Recreation Sites²

Marshall State Fish and Wildlife Area

The 6,000-acre Marshall State Fish and Wildlife Area is the largest state site in the area. It is comprised of three units along both banks of the Illinois River in Marshall and Peoria counties. The area features bottomland forests and backwater lakes. The bottomlands have cottonwoods, silver maples, willows, and moist-soil plants. This habitat supports deer, raccoon, muskrat, mink and beaver. While heavy siltation has reduced the size and capacity of the lakes, the area still attracts large flights of migrating waterfowl. Wood ducks remain through the summer to nest and raise young. The river bluffs are set back from each side of the river, along Routes 26 and 29. The forests atop the bluffs include oak, hickory, and walnut trees. Wildlife includes deer, squirrels (including flying squirrels), and a variety of birds.

The Marshall Unit of the SFWA, the largest with 3,000 acres, lies on the east side of the river, in southwestern Marshall County. Available activities include hunting, fishing, and boating. The unit also has hiking trails and a small primitive campground.

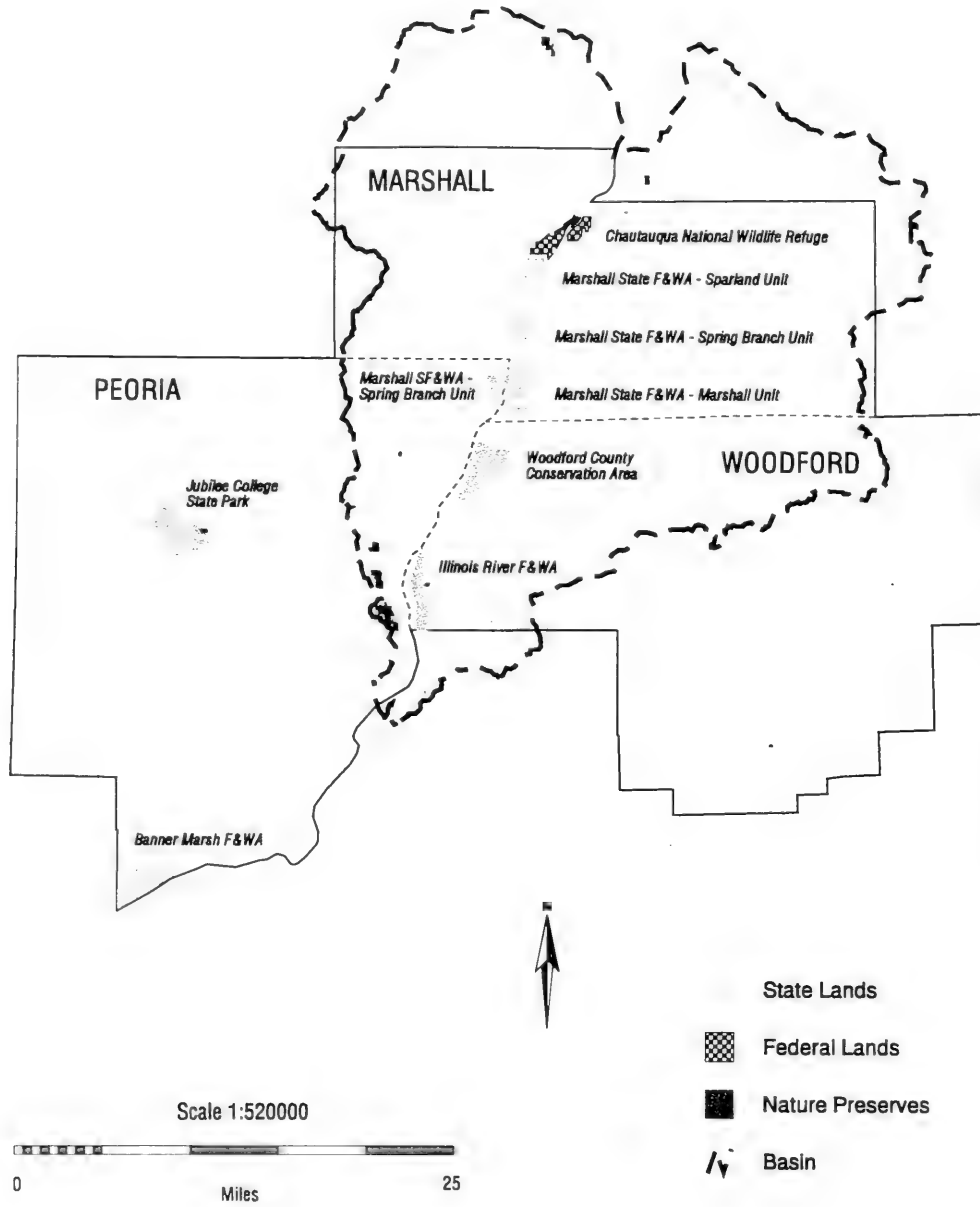
The 1,650-acre Spring Beach unit is on the west side of the Illinois River, in the northeast corner of Peoria County. In addition to hunting areas, this unit features a picnic area and hiking trails.

The Sparland Unit is the smallest with 1,300 acres, most of which are covered by water. Waterfowl hunting is the primary activity, but fishing is also popular at certain times. The backwaters are quite shallow, and boat access is difficult when the water is low.

¹ Unless otherwise noted, information in this chapter is from IDNR promotional materials, internal documents, and discussions with IDNR personnel.

² This sections refers only to sites within the boundaries of the River Bluffs area, which do not coincide with the boundaries of the three counties discussed in the remainder of this socio-economic assessment. (See Figure 1-46)

Figure 1-46.
Significant Natural Resource Areas in the Illinois River Bluffs Area



Adjacent to the Sparland Unit, just to the north, is the Cameron Unit of the Chatauqua National Wildlife Refuge. The area is undeveloped and managed for waterfowl hunting.

Woodford County Conservation Area

Woodford County Conservation Area is a 2,900-acre site in northwestern Woodford County. The conservation area lies on the eastern side of Goose Lake, one of the Illinois River's largest backwater lakes. Most of the acreage is covered by water, and the site is managed primarily for hunting and fishing. Blinds for waterfowl hunting are available in the fall. Fishing is available at Goose Lake and Upper Peoria Lake — each backwaters of the Illinois River — and along 3,500 feet of man-made fishing channels.

Camping sites are available for tents and trailers, as well as a sanitary dump station. Other facilities include picnic areas, boat docks, and a boat launching ramp. Visitors can rent boats or bring their own.

Site staff also manage the 2,400-acre Illinois River Fish and Wildlife Area a few miles downstream. The satellite is undeveloped and almost completely covered by backwater lakes.

Natural Areas and Nature Preserves

The River Bluffs area also contains 12 nature preserves and 29 natural areas. These sites include woodlands, prairies, marshes, and fens. With an emphasis on natural preservation and conservation, these sites are undeveloped and lightly visited.

Attendance at State-Owned Recreation Sites

Marshall County SFWA has been the most heavily visited site in the River Bluffs area each year since 1981. Attendance fell from its high of nearly 84,000 visitors in 1976 to its low of 54,000 in 1980. Since 1981, the number of visits has gradually increased, reaching 71,200 in 1996.

Attendance at Woodford County CA has been far more volatile. Over 98,000 visitors came to the site in 1975, but attendance fell by two-thirds between 1975 and 1981. Attendance has ranged anywhere from 13,000 (in 1993, when extreme flooding expanded waterfowl habitat beyond site boundaries and interfered with visitor counts) to 62,000 (in 1990). Overall, attendance has averaged about 44,000 since 1980.

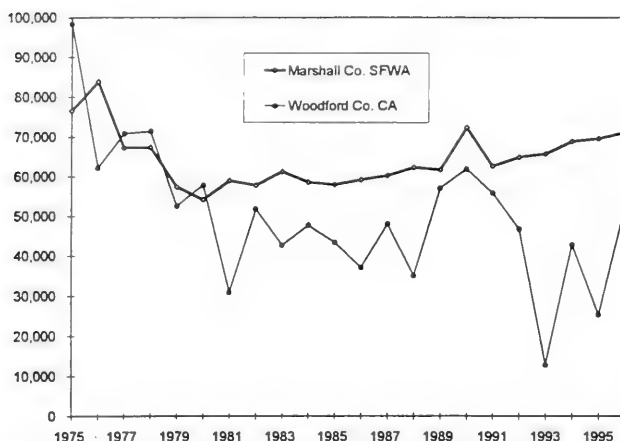


Figure 1-47. Attendance at Marshall County SFWA and Woodford County CA, 1975-1996

Economic Impacts of State Sites

Parks and other state-owned lands contribute to the local economy mostly through increased local tourism. To examine the impact of visitor spending³ at area sites, IDNR used IMPLAN, an input-output model built on county level data.⁴

Overall, the two area sites generate about \$1.3 million in total economic output, \$0.4 million in personal income, and about 20 jobs. Manufacturing accounts for over one-third of the increased output, but a much smaller share of the jobs, while retail and wholesale trade (which includes the eating and drinking establishment industry) accounts for the majority of the jobs. The services sector accounts for about one-fourth of the income and jobs, but for a lower share of the increased output. Agriculture, mining, construction, TCPU (transportation, communications, and public utilities), government, and financial institutions (including insurance and real estate) account for much smaller shares of the impacts. The results indicate that while manufacturing receives the biggest boost from site visitors, it creates fewer (albeit better-paying) jobs than trade and services.

³ Spending estimates are based on *Economic Impacts of Expenditures at Selected Recreation-Sites in Illinois*, a report submitted to IDNR by the Center of Regulatory Studies (December 1996).

⁴ IMPLAN is designed to trace the ultimate impacts of a stimulus (such as increased and decreased tourism) as it flows through the economy.

Table 1-31. Boat Registrations, 1988 and 1996

	1988	1996
Marshall County	829	1,002
Peoria County	8,375	9,342
Woodford County	1,438	1,994
Total	10,642	12,338

Boating

The three River Bluffs counties, which contain about 2% of the state's population, accounted for over 3% of its boat registrations in 1996. The concentration of registrations is somewhat above average, with 52 per 1,000 residents, compared to 32 statewide (47 excluding Cook County). Local registrations overall are about 15% higher than the area's profile would suggest⁵, suggesting that residents are particularly attracted to boating opportunities centered on the Illinois River and its backwaters. However, the area's 1.9% annual growth in boat ownership since 1988 trails the state average of 2.3%.

Peoria County, which contains 80% of the area's population, ranks 10th among Illinois' 102 counties in total boat registrations. However, in registrations per 1,000 residents it ranks 82nd (with 50 per 1,000). This is not unusual — urban residents are generally less inclined towards boating. Marshall County's 73 registrations per 1,000 residents is by far the highest in the area, ranking 16th statewide.

Fishing and Hunting

About 17,100 fishing licenses⁶ were purchased in the River Bluffs counties in 1993, down somewhat from preceding years due to extreme flooding. The area accounted for 2.6% of statewide sales, higher than its 2.0% share of the population. Out-of-state anglers account for less than 1.4% of the licenses, compared to the state average of over 6%. This is probably due to the area's central location and the lack of high-profile fishing lakes.

In 1993, hunters purchased 9,500 licenses in the River Bluffs counties, accounting for almost 3% of the state total. About 1.8% of the local sales were to non-Illinois residents, compared to 3.4% statewide. As with fishing, the low proportion of out-of-state hunters is due to the area's central location.

Between 1989 and 1993, deer was the area's most popular game, based on the estimated

⁵ Based on an IDNR analysis of boating registration in all 102 Illinois counties.

⁶ Includes combination hunting/fishing, resident, non-resident, and 10-day non-resident fishing licenses.

Table 1-32. Hunting Activity

Game	Hunters	Days Afield	Harvest
Deer		79,075	33,103
-Archery	2,210	50,241	831
-Long Gun	4,370	17,785	3,041
Squirrel		30,392	46,541
-Fox Squirrel	4,542	24,071	37,641
-Gray Squirrel	1,404	6,321	8,900
Rabbit	5,014	28,834	32,272
Duck	2,480	25,661	19,925

79,100 annual days afield⁷. The area accounted for about 3.1% of the activity and 2.8% of the harvest. While the long-gun season attracts twice as many individual hunters, bow hunters spend almost three times as many days in the field due to the longer archery season. Long gun hunting accounts for about 79% of the 3,900 deer harvested.

Squirrel is the next most popular game, with 30,400 hunter-days afield, accounting for 2.8% of the statewide activity and harvest. Rabbit, pheasant, dove, and waterfowl⁸ (especially duck) are also popular with hunters.

Conclusion

While the River Bluffs area lacks high-profile outdoor recreation areas, the Illinois River, its backwaters, and the surrounding area support substantial boating, fishing, hunting, and other activities. The two major state-owned sites, Marshall State Fish and Wildlife Area and Woodford County Conservation Area, are primarily managed for hunting, boating, and fishing. Hiking, picnicking, and wildlife watching is also available. Site visitors benefit the local economy, generating about \$1.3 million in economic output and about 20 jobs.

Boating is fairly popular in the area, with about 52 boat registrations per 1,000 residents, compared to 32 statewide (47 excluding Cook County). Fishing in the area is centered on the many backwater lakes. Deer is the area's most popular game for hunters, as in most of Illinois. Other popular game include squirrel, rabbit, and waterfowl.

⁷ Hunting data from IDNR's *Hunter Activity and Wildlife Harvest in Illinois: County Averages for 1989-1993*. This report relied on mailed hunter surveys. The authors caution that no adjustments were made to account for known biases inherent to this sampling technique.

⁸ Waterfowl hunting data from IDNR's *Illinois Waterfowl Harvest, Hunter Activity, and Attitudes Toward Dates for Teal/Duck/Goose Seasons, Zone Boundaries, and Goose Harvest Monitoring System, in 1994-95*.

Transportation Infrastructure

A region's transportation infrastructure — its roadways, airports, waterways, and railways — enables businesses and residents to move goods and people. Coupled with information regarding demographics and economics, trends in transportation infrastructure and its usage are strong indicators of the nature of a region's development and its suitability for various resource management strategies.

Auto Traffic

Roads

Two major interstates and their spurs traverse the Illinois River Bluffs region. I-39 runs north-south through the eastern edge of both Woodford and Marshall counties. I-74 runs east-west through Peoria County, connecting Peoria to Galesburg and Bloomington-Normal.

Between 1973 and 1995, 210 miles of road were added in the Illinois River Bluffs region, bringing the total to 3,757 miles, 2.71% of the state's total mileage. Since 1980 the area's road miles grew 0.3% annually, greater than the state's 0.19% annual growth rate.¹

Of the three counties, Peoria has the largest road network, with about half of the road-miles, followed by Woodford County with 30% and Marshall County with 20%.

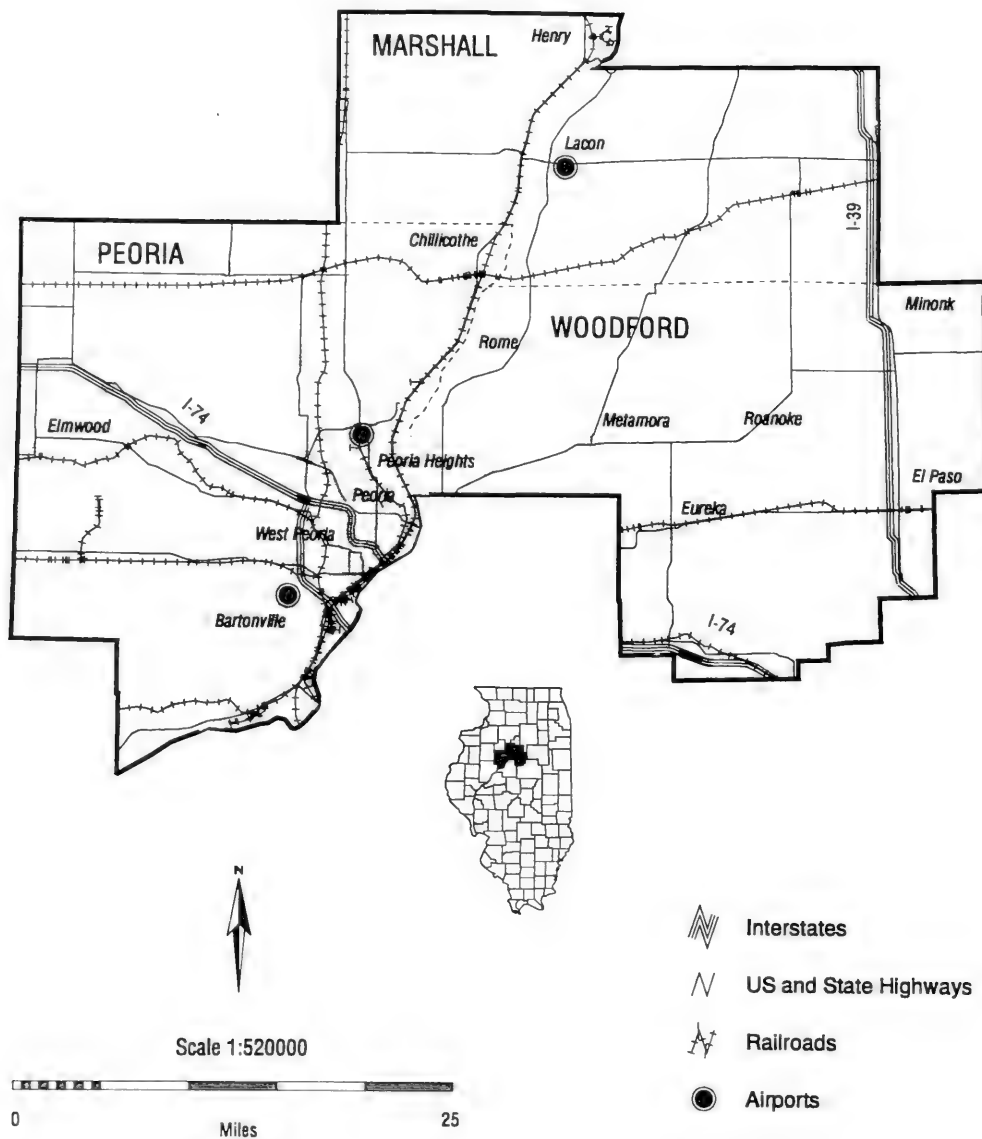
Table 1-33. Miles of Road in the Illinois River Bluffs Region

	1973	1985	1995
Marshall	744	747	769
Peoria	1,715	1,816	1,860
Woodford	1,088	1,104	1,129
Region	3,547	3,667	3,757

¹ Mileage data from Illinois Department of Transportation: Office of Planning and Programming; *Illinois Travel Statistics*, various years.

Figure 1-48.

Major Airports, Roads and Railroads



Vehicle Registration

Area residents registered 140,257 passenger cars in 1995,² with 82% of those registered in Peoria County. Regionally, car registrations have increased only 9.3% over 1975 levels, significantly less than the 27.3% increase statewide.

Motorcycle registrations have generally declined in the region. Between 1975 and 1985, registrations dropped from 6,480 to 5,250; by 1995 they had dropped even further, to 4,549. Peoria and Marshall counties followed this pattern, but Woodford County experienced a different trend, with 1995 registrations being slightly higher than 1975 levels. During this twenty-year period there were a few significant increases in motorcycle registrations due to hikes in the price of gasoline. The overall decline is probably due to better fuel efficiency in cars, lower gas prices, changing lifestyles, and an aging population.

Registrations for trucks (excluding semis) and buses in the area increased from 30,516 to 45,631 between 1975 and 1995, an annual growth rate of 2%, lower than the state average of 2.3%. In 1995, roughly 84% of the vehicles in this category were pick-ups, which have been reported separately since 1988. The region has a lower proportion of cars to pick-up trucks (3.6 to 1), than statewide, (5.4 to 1).

There were roughly 19,791 semis and trailers registered in the five counties in 1995, about 5,000 more than the number registered in 1975.³ Of course, semis usually function as long-distance haulers; locally-registered semis may spend little time at "home", while out-of-town semis routinely drive through. How many miles semis drive locally is difficult to determine from available data.

Vehicle-Miles Traveled (VMT)

In 1995, the Illinois River Bluffs region accounted for an estimated 2,149 annual million vehicle-miles traveled (VMT), 2.28% of the state total. Peoria County had 72% of the region's VMT (1,558 million) while Woodford County had 19% (408 million) and Marshall made up the remaining 9% (183 million).

Since 1973, annual VMT in the area has grown at an average annual rate of 1.35%, compared to a statewide average of 2%.⁴ This growth level has not been constant. Between 1973 and 1980, an era marked by severe oil shortages in 1973 and 1978, the region's VMT decreased by .88% annually. Clearly drivers adjusted to high gas prices by driving less. From 1980 to 1995 annual VMT growth was 2.39%.

² Vehicle registration data from the State of Illinois Office of the Secretary of State, *County Statistical Report for Motor Vehicle License Units and Transactions Received*, various years.

³ This figure includes roughly 1,690 "regional" trucks -- mostly semis -- registered through IDOT's IRP program, where licensees pay prorated fees based on the percentage of miles driven in Illinois.

⁴ VMT data from *Illinois Travel Statistics*.

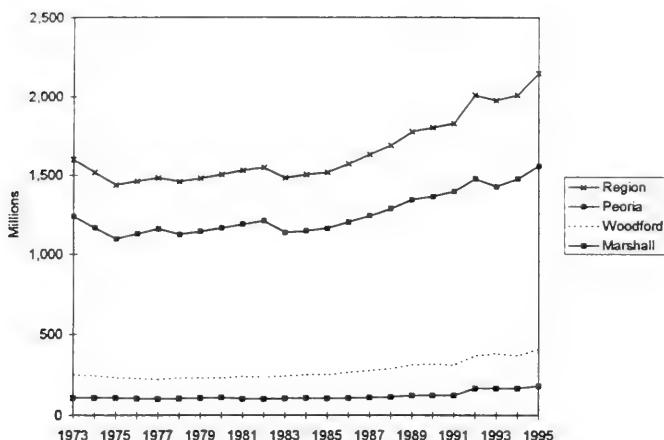


Figure 1-49. Annual Vehicle-Miles Traveled in the Illinois River Bluffs Region

Other Traffic

Bus Lines

Intercity bus service in the Illinois River Bluffs region is provided by Greyhound out of Peoria.

Air Traffic

Peoria County has two public use airports — a general aviation airport in Mt. Hawley, and the Greater Peoria Airport, a primary airport which averages more than 200,000 enplanements a year⁵. Marshall County has one general aviation airport in Lacon, and Woodford County does not have a publicly accessible airport.

Water

Illinois has 1,119 miles of commercial navigable waterways and one of its six major waterways, the Illinois River, runs through the middle of the Illinois River Bluffs region. The river supports significant commercial traffic, handling such products as dry chemicals, steel products, fly ash, coal, cement, grain, sand and gravel, petroleum products, and soybean oil.⁶

⁵ See Illinois Department of Transportation, Division of Aeronautics, *Illinois Airport Directory*, 1996.

⁶ River terminal data from IDOT's *Illinois Directory of Lake and River Terminals* 1994.

Rail

The Illinois River Bluffs region does not have direct Amtrak passenger rail service.

Two high density freight rail services (lines transporting over 5 million tons of freight per mile) run through this region, one traveling east-west, the other north-south. Four rail services handle light density freight (lines carrying less than 5 million tons). The light density freight lines typically serve agricultural businesses or connect industrial firms in urban areas to the high density freight network.⁷

Conclusion

The Illinois River Bluffs region is traversed by one major interstate highway running north-south and one running east-west. Between 1973 and 1993, 210 miles of road were added, a 6% increase compared to a 35% increase in vehicle-miles traveled (VMT). In addition to major interstate travel, the area has access to Greyhound service and several airports.

⁷ Rail Density data from IDOT's *Illinois Rail Plan: 1991-92 Update*.

Property Taxes

Property taxes are the major source of tax revenue for local government in Illinois, providing more than 75% of total revenue.¹ These taxes finance the majority of local government services, including school districts, county, township, and municipal governments, and special districts such as fire, park, sanitary, library, and airport.

Property taxes depend primarily on the tax rates and the equalized assessed valuation² (i.e., tax base) of property in the county. The tax rate is dependent on the amount of revenue sought by the local governments (tax levy), the assessed value of the property (tax base), and the legal maximum tax rate. The tax base is based primarily on the assessed values, which are usually reassessed every four years, and the amount of residential, commercial, and industrial expansion.

Tax Revenues

Property tax revenues in Illinois have increased significantly in the last ten years, after a steady decline during the 1970s and early 1980s. Real property tax revenues collected in Illinois went from more than \$9.8 billion in 1971 to almost \$12.8 billion in 1995.

In the Illinois River Bluffs area, property taxes have fluctuated between \$41–\$210 million annually. Overall, property tax revenues in 1995 are 20% below the 1971 level. All three

Table 1-34. Real Property Tax Revenue
(Million 1995\$)

	1971	1975	1980	1985	1990	1995
Marshall	12.0	11.0	12.1	9.3	8.4	10.6
Peoria	170.5	175.9	158.7	125.1	113.0	127.3
Woodford	24.2	23.0	25.3	20.4	19.6	26.8
River Bluffs	206.7	210.0	196.1	154.8	141.0	164.8
State	9,814.4	9,109.2	8,615.4	8,933.7	11,283.8	12,771.1

¹ All property tax data is from Illinois Department of Revenue, *Illinois Property Tax Statistics*, various years.

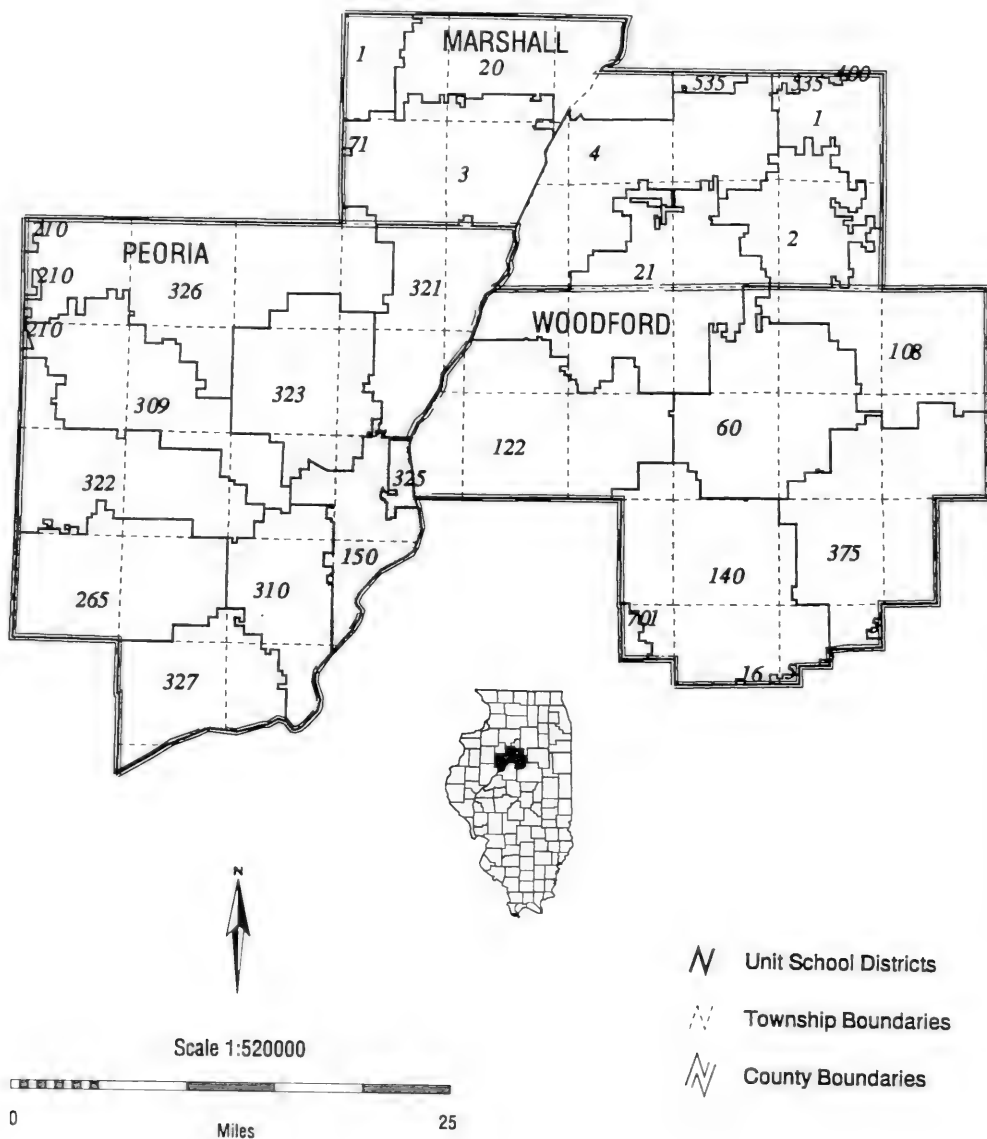
² Equalized assessed valuations are determined by several factors including:

- property is assessed at 33.3% of fair market value (except where property is classified);
- equalization process is to correct for counties which over- or under assess property;
- the amount of farmland in a county, which is assessed on productivity instead of market value.

Figure 1-50.

Major Property Tax Districts

Counties, townships, municipalities and 1992 unit school districts and codes.



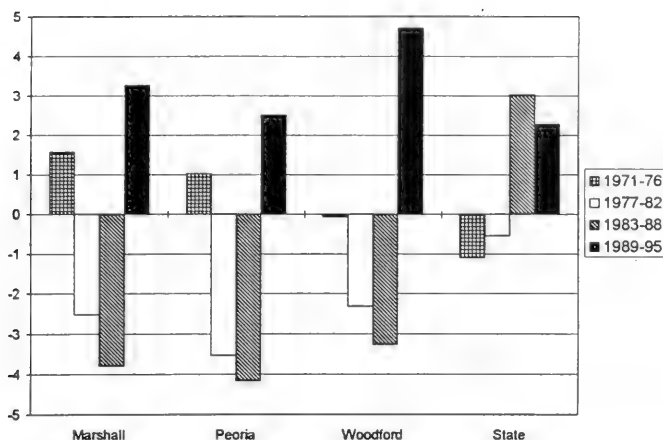


Figure 1-51. Average Annual Percentage Change in Property Tax Revenue
(using 1995 dollars)

counties in the area had a decrease in property tax revenues between 1971 and 1985, with revenues rebounding somewhat since then. The largest decline was in Peoria County (25%).

Property Tax Base

The property tax base in Illinois has declined 11% since 1969, although it has rebounded (32% increase) from the low point in 1985. The tax base in the Illinois River Bluffs area has declined 56%, even though it has rebounded 28% since 1990.

The largest decline occurred in Marshall and Peoria counties, where the tax base dropped 58% since 1969. The tax base also declined in Woodford County by 46%.

Table 1-35. Real Property Tax Base
(Million 1995\$)

	1969	1975	1980	1985	1990	1995
Marshall	336	257	236	162	112	140
Peoria	3,854	3,033	2,367	1,648	1,277	1,624
Woodford	664	490	520	363	271	359
River Bluffs	4,855	3,780	3,123	2,173	1,660	2,123
State	176,730	144,482	127,315	119,004	138,443	157,654

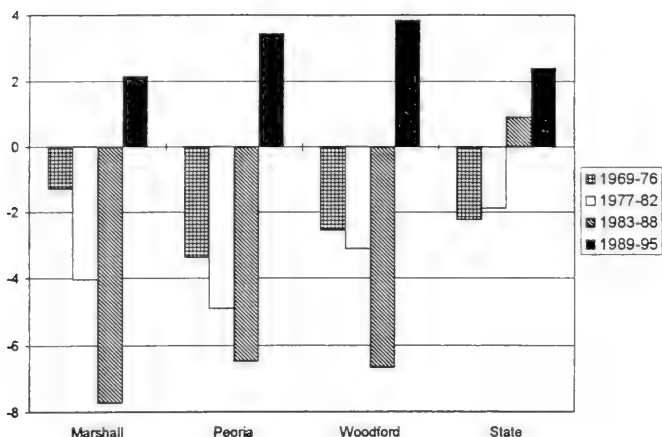


Figure 1-52. Average Annual Percentage Change in Property Tax Base
(using 1995 dollars)

Figures 1-53 and 1-54 show the make-up of the tax base in 1981 and 1995 by the different classes of property. In 1995, residential property provided the largest chunk of the state's tax base (55%), followed by commercial (27%), industrial (13%), and farm property (4.7%). This has changed somewhat since 1981, when farm property provided 12.4% of the tax base and residential property provided 50%. Residential and commercial properties accounted for a higher proportion of the tax base in 1995 than in 1981.

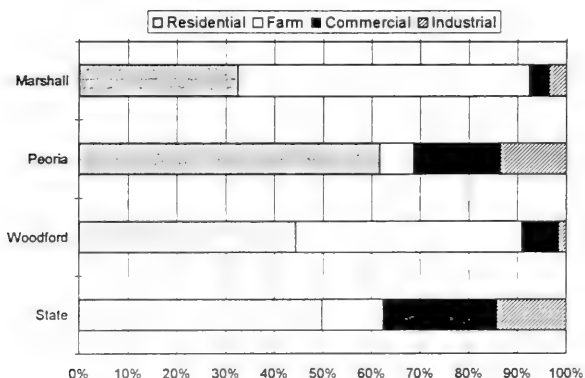


Figure 1-53. 1981 Property Tax Base by Class of Property

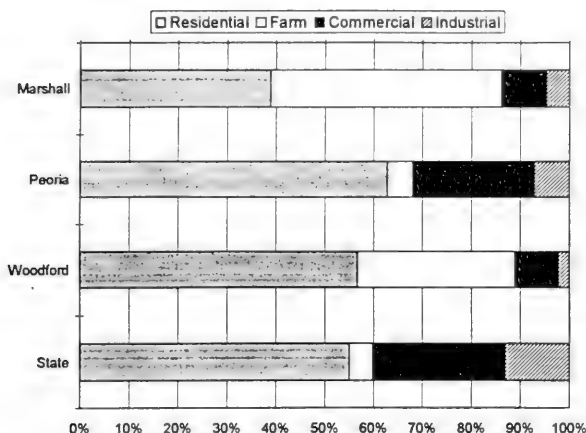


Figure 1-54. 1995 Property Tax Base by Class of Property

The make-up of the tax base in the area varies among the three counties because of the different types of economic activity dominating each. Marshall and Woodford counties, for example, are rural farm communities and subsequently obtain a relatively large proportion of their tax base from farm property, 47% and 32% respectively in 1995. The tax base in Peoria County reflects its more urban character, with residential property providing 63% of the taxes and commercial property 25%.

Since 1981, both counties have had more of the tax base come from residential and commercial property and less from farm property. For example, in Woodford County the proportion of the tax base from farm property fell from 46% to 32%, while the residential property tax base increased from 44% to 57% and commercial property from 8% to 9%.

The percentage of the tax base from industrial property has always been significantly below the state average in both counties.

Tax Rates

Over the past couple of decades the average property tax rate has risen in the state and the Illinois River Bluffs area (Figure 1-55). The tax rate is typically expressed in dollars collected per \$100 dollars of tax base. Since 1966, the statewide average property tax rate has risen from \$4.60 to \$8.19 per \$100 of tax base — a 78% increase. The tax rate has more than doubled in all three counties, although all three were below the state average in 1995.

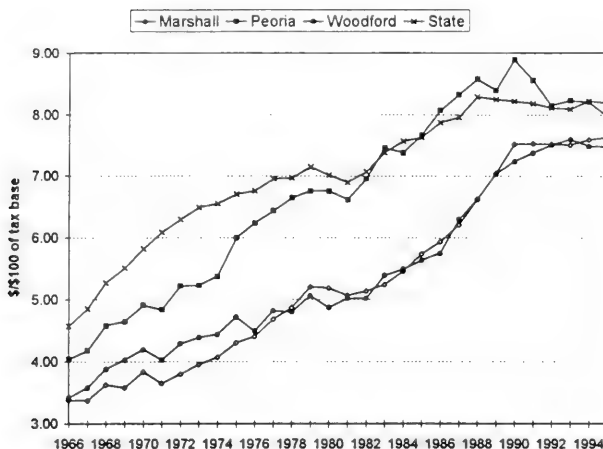


Figure 1-55. Average Property Tax Rate

Peoria County, which has always had the highest rates in the area, was above the state average from 1985-93. Since 1990, however, its rates have declined 7%.

Tax rate increases are directly related to a greater need for revenue and/or a significant decline in the tax base. For example, between 1969 and 1995 the tax base in Woodford County declined by almost 46%, while revenue increased 1%. To raise these additional revenues tax rates were increased 119%.

Property Tax Distribution

In Illinois, property taxes are used to finance a variety of local government services, with the majority going to school districts (Figure 1-56). The remainder goes to municipal (15%), county (10%), and township governments (3%), and to other services (12%) such as fire, sanitary, park, library, and airport services.

A majority of property tax revenues in the area also goes to schools -- 66% in Marshall, 62% in Peoria County and 72% in Woodford County. All three counties are above the state average in taxes distributed to township governments, especially Marshall and Woodford counties which allot 10% and 9% to townships, whereas the state on average allots 3%. Marshall and Woodford are below the state average in taxes allotted to municipal government and other special taxing districts. Peoria County has seen the most change since 1980 in the allotment of property taxes — with more going to schools (53% to 62%) and less to municipalities (25% to 13%).

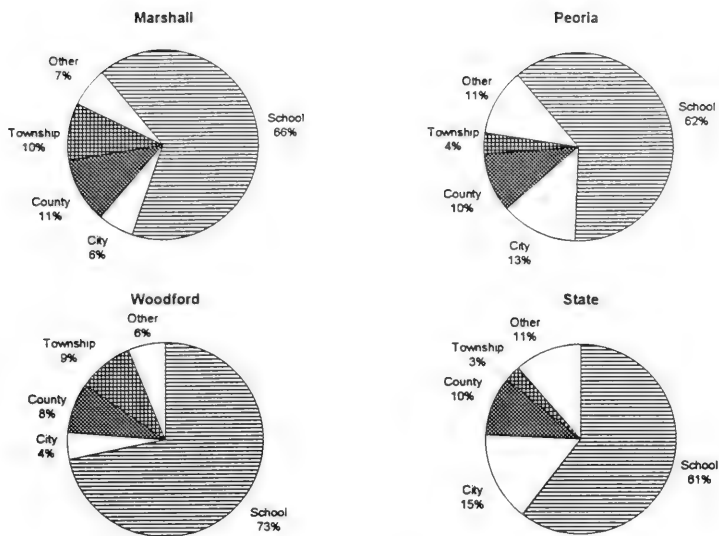


Figure 1-56. 1995 Property Tax Distribution³

Conclusion

While property tax revenues increased statewide, revenues decreased 20% in the River Bluffs area, with the largest decline occurring in Peoria County.

Property taxes are determined by the tax base and the tax rate. Overall, the tax base has declined and the tax rates have risen in the three-county area and in the state. The tax base declined 56% in the River Bluffs area while tax rates have more than doubled.

For the state, the majority of the tax base is from residential property. This trend holds true for Peoria and Woodford counties. Marshall County, however, obtains the largest percentage of its tax base from farm property (47%).

For both the River Bluffs area and the state, the majority of property tax revenues (66% in Marshall, 62% in Peoria and 72% in Woodford) go to school districts.

³ The property tax distributions are based on total property taxes extended, which is the dollar amount of taxes billed to property taxes extended. This is different from the amount collected due to charges against collections such as protest, delinquencies, certificates of error and other changes. The amount collected is typically more than 97% of the amount of taxes extended.

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PART II

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Air Quality

Air Pollutant Concentrations

The Illinois River Bluffs area lies across portions of the U.S. Environmental Protection Agency's (U.S. EPA) Burlington-Keokuk Interstate (IA-IL) Air Quality Control Region (AQCR) 65 and the North Central Illinois Intrastate, AQCR 71. Several air quality monitoring stations are located in or near the lower part of the basin in the Peoria metropolitan area. The measurements at these stations, however, best represent air quality in urban areas of the basin. Air quality data for 1992-1996 from these stations are summarized in Tables 2-1-2-6.

Table 2-1 lists the selected air quality measurement locations, their Universal Transverse Mercator (UTM) coordinates, and the criteria pollutants measured at each (Illinois Environmental Protection Agency, IEPA, 1997). Criteria pollutants are those for which federal air quality standards have been set.

Table 2-1. Air Quality Site Directory for the Illinois River Bluffs Area
(Selected sampling sites from USEPA Air Quality Control Regions 65)

City name (AIRS code)	Address	UTM coordi- nates (km)		Equipment
AQCR 65				
Peoria County				
Peoria (1430024)	Fire Station No. 8	N.	4507.050	SO ₂ , O ₃
	MacArthur and Hurlburt	E.	279.679	
Peoria (1430036)	Commercial Building	N.	4508.585	CO
	1005 N. University	E.	279.196	
Peoria (1430037)	City Office Building	N.	4508.197	PM ₁₀ , Pb
	613 N.E. Jefferson	E.	281.675	
Peoria Heights (1431001)	Peoria Heights High School	N.	4513.476	O ₃
	508 E. Glen Ave.	E.	281.660	
Tazewell County				
East Peoria (1790002)	East Peoria Medical Center	N.	4504.500	PM10
	235 East Washington	E.	282.200	

Published annual reports from the Illinois EPA (1993-1997) indicate that ozone (O₃) data are available at two sites, particulate matter with aerodynamic particle diameters smaller than 10 micrometers (PM₁₀) at two, and sulfur dioxide (SO₂), carbon monoxide (CO), and lead (Pb) at one each. Nitrogen dioxide (NO₂) was not measured in the region.

Air quality standards are written to protect human health (*primary* standards) and welfare (*secondary* standards). Because health and ecological effects vary according to the nature of the pollutant, standards also vary in terms of averaging times and the metric (maximum or mean) of the measurement. For example, the ozone standard is written in terms of the maximum daily 1-hour average concentration, while the particulate matter standard is written in terms of the maximum 24-hour average and the annual mean concentrations.

Table 2-2 gives ozone data for stations in Peoria and Peoria Heights, Illinois. Note that ozone was only measured between April and October (the ozone season) of each year. The values listed are the highest 1-hour mean concentrations each year. The values range from 0.079 to 0.107 parts per million (ppm), and none exceeded the ozone standard.

Table 2-2. Daily Maximum 1-hour Mean Ozone Concentrations, April-October
(in parts per million, ppm)

Station	1992	1993	1994	1995	1996
Peoria-MacArthur & Hurlburt	0.090	0.079	0.097	0.093	0.087
Peoria Heights-508 E. Glen	0.094	0.082	0.107	0.102	0.096

Note: There were no observed exceedances of the primary standard of 0.12 ppm at any station.

Table 2-3 lists PM₁₀ data for 1992-1996 for sampling stations at Peoria and East Peoria. The highest annual maximum 24-hour mean concentration observed was 68 µg/m³ at the East Peoria site in 1994, and the lowest was 42 µg/m³ at the Peoria site, in 1993. During 1996, the most recent year for which data are available, the highest 24-hour mean PM₁₀ concentrations at these two sites were 60 and 52 µg/m³, respectively. Annual mean PM₁₀ concentrations ranged from 20 µg/m³ at the Peoria site in 1993 and 1995, to 31 µg/m³ at East Peoria in 1992. No exceedances of the standards for particulate matter were observed.

Table 2-3. Concentrations of Particulate Matter Less Than 10-µm Diameter
(in micrograms per cubic meter, µg/m³)

Station		1992	1993	1994	1995	1996
Peoria	Max. 24-hour mean	65	42	54	50	52
	Annual mean	25	20	21	20	21
East Peoria	Max. 24-hour mean	59	49	68	53	60
	Annual mean	31	23	26	23	24

Note: There were no observed exceedances of the annual mean primary standard of 50 µg/m³ or the 24-hour primary standard of 150 µg/m³ at either station.

Table 2-4 shows SO₂ data for the Peoria sampling station, including maximum observed 3-hour and 24-hour concentrations, and annual mean concentrations. The maximum 3-hour mean concentrations ranged from 0.121 ppm in 1993 to 0.178 ppm in 1995. Maximum 24-hour mean concentrations ranged from 0.040 ppm in 1994 to 0.081 ppm in 1995. Annual mean concentrations have been nearly constant ranging from 0.006 ppm to 0.007 ppm in the last five years. No exceedances of any of the primary or secondary standards for 3-hour mean, 24-hour mean, or annual mean SO₂ were recorded.

Table 2-4. Sulfur Dioxide Concentrations
(in parts per million, ppm)

Station		1992	1993	1994	1995	1996
Peoria--MacArthur & Hurlburt	Max 3-hour mean	0.128	0.121	0.129	0.178	0.140
	Max. 24-hour mean	0.053	0.072	0.040	0.081	0.077
	Annual mean	0.006	0.006	0.006	0.007	0.007

Note: There were no observed exceedances of the annual mean primary standard of 0.03 ppm, the 24-hour primary standard of 0.14 ppm, or the 3-hour secondary standard of 0.50 ppm.

Table 2-5 shows carbon monoxide concentrations at Peoria. A downward trend in maximum concentrations is apparent for both the 1-hour and 8-hour averaging times. In both cases the highest values occurred in 1992 and the lowest in 1996. No exceedances of the CO standards were observed at this monitoring site.

Table 2-5. Carbon Monoxide Concentrations
(in parts per million, ppm)

Station		1992	1993	1994	1995	1996
Peoria--1005 N. University	Max. 1-hour mean	11.2	11.5	8.2	8.4	7.3
	Max. 8-hour mean	9.2	8.8	6.6	5.7	5.0

Note: There were no observed exceedances of the 1-hour primary standard of 35 ppm, or the 8-hour primary standard of 9 ppm at any station. (The maximum 8-hour value for 1992 is not considered an exceedance, since it rounds to 9 ppm.)

Table 2-6 summarizes annual mean lead concentrations at Peoria. Lead concentrations remained constant at 0.02 µg/m³ from 1992 through 1996. No exceedances of the quarterly standard of 1.5 µg/m³ were observed.

Table 2-6. Annual Mean Lead Concentrations
(in micrograms per cubic meter, µg/m³)

Station	1992	1993	1994	1995	1996
Peoria--613 N.E. Jefferson	0.02	0.02	0.02	0.02	0.02

Note: There were no observed exceedances of the quarterly mean primary standard of 1.5 µg/m³.

Air Pollutant Emissions Inventory

Table 2-7 presents estimated 1996 annual emissions of five criteria pollutants for the four counties that make up most of the Illinois River Bluffs area. It should be noted that most of Peoria and Woodford counties are not within the boundaries of the Illinois River Bluffs area. The estimated emissions are for stationary point sources only; they do not include emissions from mobile or area sources. The table also shows the percent of each pollutant's four-county total attributable to each county in 1996. Peoria County accounted for more than half of the particulate matter emissions, almost half of the sulfur dioxide emissions, and more than 70% of the emissions of nitrogen oxides, volatile organic matter, and carbon monoxide. Putnam County contributed half of the total sulfur dioxide emissions, about a quarter of the nitrogen oxides and carbon monoxide, and 20% of the particulate matter. Emissions from Woodford County were minimal; its maximum contribution to the four-county totals was 6% of the particulate matter.

**Table 2-7. Estimated Stationary Point Source Emissions
in the Vicinity of the Illinois River Bluffs Area**
(Source: Illinois Environmental Protection Agency, 1997)

County	Particulate matter		Sulfur dioxide		Nitrogen oxides		Volatile organic material		Carbon monoxide	
	T/yr	%	T/yr	%	T/yr	%	T/yr	%	T/yr	%
Marshall	1,103	21	1,417	2	302	1	447	12	31	2
Peoria	2,730	53	33,038	48	17,655	71	2973	79	1304	75
Putnam	1,023	20	34,567	50	6,742	27	200	5	403	23
Woodford	291	6	0	0	19	0	143	4	4	0
Total	5,147	100	69,022	100	24,718	100	3763	100	1742	100

Visibility

Visibility can serve as an index of the concentration of airborne fine particles, especially ammonium sulfate, although atmospheric humidity also affects visibility to some extent. The poorer the visibility, the higher the concentration of fine particles. A report of the National Acid Precipitation Assessment Program reviewed spatial and temporal variations in visibility in the United States (NAPAP, 1990). A map of spatial variations of visibility during the mid-1970s shows that central and northeastern Illinois had some of the poorest median midday airport visibility in the contiguous United States--about 10-11 miles. This contrasts with values of 20-45 miles in the Great Plains and values greater than 50 miles over most of the mountainous western United States.

The NAPAP report also documents seasonal and long-term visibility trends. In 1950, visibility in central and northeastern Illinois was worse in the first calendar quarter (roughly during winter) than during the rest of the year. By 1980, however, the situation had changed significantly: winter visibility stayed roughly constant, but spring, fall, and especially summer visibility had decreased substantially in central and northeastern Illinois and most of the eastern United States. These trends coincide with increased use of electric power for summer air conditioning and the trend at that time toward construction of tall stacks for dispersion of power plant plumes.

In addition, the NAPAP report documents the high correlation between sulfur emissions and haziness in the northeastern United States, and the trend toward decreasing sulfur emissions in the region since the 1970s. In view of the further reductions in sulfur emissions mandated by the 1990 Clean Air Act amendments, airborne fine sulfate concentrations should continue to trend downward, and this should translate into increased visibility in central Illinois in the future.

Atmospheric Wet Deposition

Deposition of materials in precipitation (i.e., wet deposition) has been measured routinely by the National Acid Deposition Program/National Trends Network (NADP/NTN) at eight locations in Illinois for many years. There is no NADP/NTN sampling site within the Illinois River Bluffs area, but the area is centered roughly equidistant from three Illinois sampling locations. These sampling sites are at Bondville (NADP/NTN site IL-11), to the southeast near Champaign, at Monmouth (site IL-78) to the west, and at Shabbona (site IL-18) to the north-northeast. Table 2-8 gives measured major ion depositions, weighted mean concentrations, and precipitation at these sites for 1994 and 1995. Two-year mean precipitation amounts were about 80 cm at all three locations. Year-to-year variations were minimal at Bondville and Shabbona, but Monmouth precipitation was about 30% higher in 1995 (90 cm) than in 1994 (68 cm).

The highest two-year weighted mean concentrations were observed at Bondville for five of the nine measured major ions (Na^+ , NO_3^- , Cl^- , SO_4^{2-} , and H^+). The Shabbona site had the highest two-year concentrations of Mg^{2+} , K^+ , and NH_4^+ , while Ca^{2+} was highest at Monmouth. The highest two-year deposition fluxes of the respective ions occurred at the same sites, despite the somewhat greater mean precipitation at Monmouth. Two-year mean pH values reflect the historical east-west gradient across Illinois, from the more acidic 4.47 at Bondville to the less acidic 4.70 at Monmouth.

**Table 2-8. Concentrations and Deposition of Major Ions in Precipitation
in the Vicinity of the Illinois River Bluffs Area**

(Data source: National Atmospheric Deposition Program, 1996-1997)

	Ca	Mg	K	Na	NH ₄	NO ₃	Cl	SO ₄	H (lab)	pH (lab)	Precip (cm)
Bondville	Concentration, in mg/L										
1994	0.19	0.026	0.023	0.069	0.44	1.50	0.13	2.26	0.0355	4.45	80.3
1995	0.23	0.029	0.027	0.083	0.43	1.58	0.14	2.10	0.0316	4.50	79.7
2-yr precip. wtd. mean	0.21	0.027	0.025	0.076	0.44	1.54	0.13	2.18	0.0336	4.47	80.0
Monmouth	Concentration, in mg/L										
1994	0.30	0.035	0.018	0.039	0.45	1.36	0.08	1.69	0.0195	4.71	68.3
1995	0.26	0.031	0.022	0.072	0.51	1.53	0.10	1.80	0.0209	4.68	89.9
2-yr precip. wtd. mean	0.28	0.033	0.020	0.058	0.48	1.46	0.09	1.75	0.0203	4.69	79.1
Shabbona	Concentration, in mg/L										
1994	0.23	0.042	0.053	0.050	0.50	1.41	0.09	1.80	0.0240	4.62	76.4
1995	0.22	0.037	0.017	0.046	0.48	1.52	0.08	1.99	0.0282	4.55	82.7
2-yr precip. wtd. mean	0.22	0.039	0.034	0.048	0.49	1.47	0.08	1.90	0.0262	4.58	79.5
Bondville	Deposition, in kg/ha										
1994	1.55	0.209	0.185	0.554	3.52	12.01	1.05	18.12	0.288	---	80.3
1995	1.85	0.231	0.215	0.661	3.45	12.56	1.09	16.76	0.252	---	79.7
2-yr. mean deposition	1.70	0.220	0.200	0.608	3.49	12.29	1.07	17.44	0.270	---	80.0
Monmouth	Deposition, in kg/ha										
1993	2.08	0.239	0.12	0.27	3.06	9.32	0.53	11.54	0.134	---	68.3
1994	2.37	0.279	0.2	0.65	4.60	13.8	0.94	16.19	0.189	---	89.9
2-yr. mean deposition	2.23	0.259	0.161	0.457	3.83	11.55	0.74	13.87	0.162	---	79.1
Shabbona	Deposition, in kg/ha										
1994	1.77	0.321	0.41	0.382	3.80	10.8	0.73	13.76	0.185	---	76.4
1995	1.84	0.306	0.14	0.380	3.96	12.6	0.65	16.48	0.235	---	82.7
2-yr. mean deposition	1.81	0.314	0.273	0.381	3.88	11.69	0.69	15.12	0.210	---	79.6

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Hazardous and Toxic Waste Generation and Management

This section of the Area Assessment examines the historical and current location of sites that may contain environmental contaminants and manufacturing facilities that may emit pollutants. The aim of the report is to help major stakeholders develop goals and strategies for the use and protection of natural resources in Areas where Ecosystem Partnerships have been formed. The reader is encouraged to review *The Changing Illinois Environment: Critical Trends, Volume 5* (ENR, 1994), which provides in-depth background information about waste generation and management trends in Illinois.

The report draws upon the following environmental databases as resource material:

- Historical Hazards (HH)
- Surface Impoundment Inventory (SII)
- Landfills Database
- Superfund
- Toxics Release Inventory (TRI)

The older a database, the more likely it is to contain out-dated entries. With minor exceptions, the data is shown verbatim. See the *Headwaters Area Assessment, Volume 4* (DNR, 1997), for a more detailed discussion of each of these databases and a list of contacts for further information. Alternatively, additional information can be obtained from WMRC Data Management at One East Hazelwood Drive, Champaign, IL 61820, telephone number 217-333-8940.

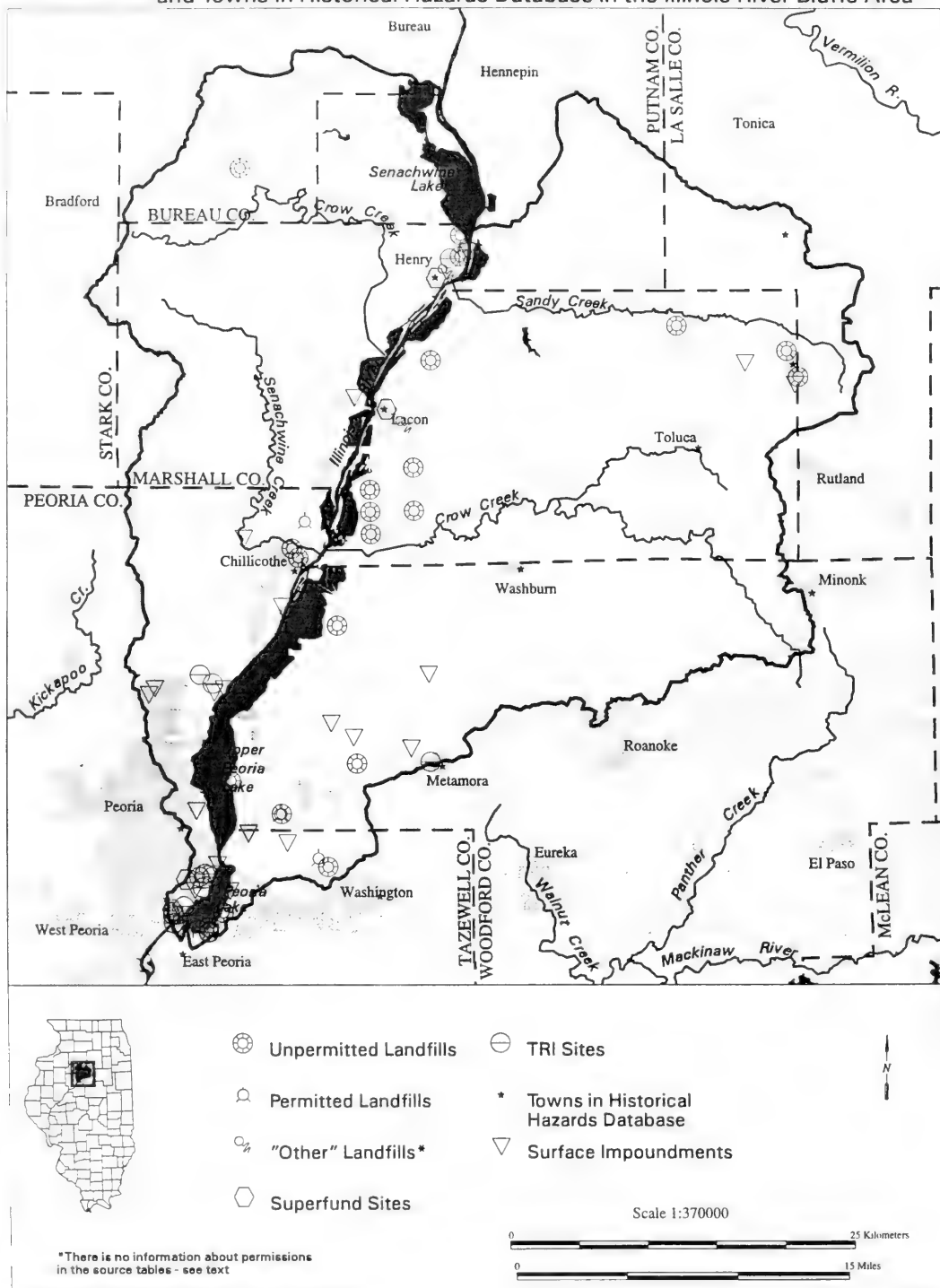
Assessment of Sites in the Region

Specific potential sources of waste generation and disposal in the River Bluffs Area are discussed below. See the maps, Figures 2-1 and 2-2, for geographic locations of these sites.

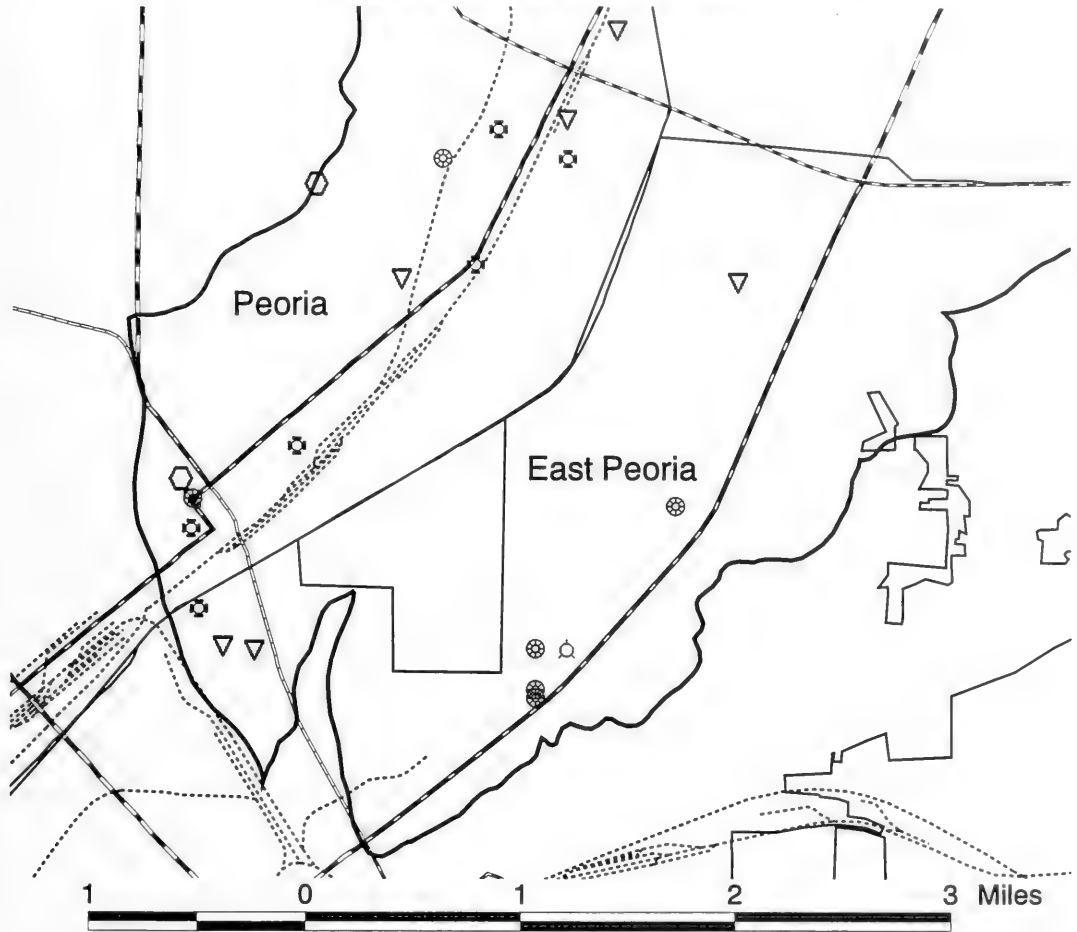
Historical Hazards Database

There are 12 towns in the Area shown in the Historical Hazards database (see Table 2-9). Each of these towns historically contained one or more industrial facilities which might have been a source of pollutants, and which may or may not still be in operation.

Figure 2-1. Landfills, Superfund Sites, TRI Sites, Surface Impoundment Sites and Towns in Historical Hazards Database in the Illinois River Bluffs Area



**Figure 2-2.
Peoria Vicinity Landfills, Superfund Sites,
TRI Sites and Surface Impoundments
in the River Bluffs Area**



- ⊗ Unpermitted Landfills
- ⊙ Permitted Landfills
- ⊙ "Other" Landfills*
- ▽ Surface Impoundments
- ⊕ TRI Sites
- ⊕ Superfund Sites
- Interstates
- == US highways
- State Highways
- - - Railroads
- ▭ Municipal Boundaries
- ▭ Area Boundary

*There is no information about permissions
in the source tables - see text



Table 2-9. Historical Hazards Towns in the River Bluffs Area

Chillicothe	Lostant	Toluca
East Peoria	Metamora	Washburn
Henry	Minonk	Washington
Lacon	Peoria	Wenona

Surface Impoundments Database

A surface impoundment is a lined or unlined lagoon used for the storage of liquids alone or mixed with solids, usually uncovered.

In the Area the Surface Impoundment Inventory shows 26 surface impoundment sites with a total of 50 impoundments. Of these sites, none are agricultural, 6 industrial, 20 municipal, and none mining.

Superfund Sites Database

There are 4 active Superfund sites in the Area (see Table 2-10).

Table 2-10. Superfund Sites in the River Bluffs Area

EPA ID	Site Name	City	Description	NPL Status
ILD006215727	Bemis Co Inc	Peoria	N/A	No
IL0001091990	Grieves Woolen Mill	Lacon	N/A	No
ILD984766394	Henry Public Well #3	Henry	N/A	No
ILT180012544	Unr-Rohm	Peoria	N/A	No

Landfills Database

Landfills have been by far the most common means of disposal for solid and sometimes liquid waste. There are 33 landfills recorded in the Area — 5 permitted, 25 unpermitted and 3 “other.” The “other” landfills have no information in the “permit” and “illegal” fields in the source tables.

TRI Database

The Toxics Release Inventory (TRI) covers year-by-year releases and transfers of chemicals by medium from manufacturing facilities. Releases include air, land, water, and underground injection. Transfers are of six types: to publically owned treatment

works (POTWs), to treatment, to disposal, to recycling, to energy recovery, and to "other" facilities. Other information, most notably on pollution prevention, is also contained in the database.

There are 13 TRI facilities which reported some releases in the Area for the years 1987-1993, with 8 reporting in 1993 (see Table 2-11). Illinois ranked 7th in the country for TRI total releases in 1993.

The chemical industry, as defined by SIC (standard industrial classification) code, is the single largest emitter of TRI chemicals nationwide in 1993. Of the 8 facilities in the area with reported releases to any media in 1993, three have chemical primary SIC codes listed.

Table 2-11. TRI Facilities in the River Bluffs Area, 1987-1993

Bemis Co. Inc.	Caterpillar Inc. Technical Center Facility	Komatsu Dresser Co. Haulpak Div.
BF Goodrich Co.*	Geon Co.*	PMP Fermentation Prods. Inc.
Caterpillar Inc.	Hallmark Metamora Fixture Ops.	W. R. Grace & Co.
Caterpillar Inc. Engine Div.	Henry Fertilizer Co.*	
Caterpillar Inc. Hose Fac.	Ivex of Peoria Inc.	

*Chemical Primary SIC Codes listed

Top Five TRI Releases for the Area for 1993

Air

• Ammonia	114,550 lbs.
• Xylene (mixed isomers)	80,000
• 1,1,1-trichloroethane	76,000
• Methanol	44,000
• Methyl isobutyl ketone	40,870

Land

These were no releases to land in the Area for 1993.

Surface Water

● Ammonia	130,750 lbs.
● Diethanolamine	3,000
● Ethylene glycol	2,700
● Formaldehyde	2,500
● Phenol	420

Underground Injection

There were no releases to underground injection in the Area for 1993.

Top Five TRI Transfers for the Area for 1993

Recycling

● Chromium	200,000 lbs.
● Nickel	200,000
● Copper	74,000
● Manganese	74,000
● Zinc Compounds	25,600

Energy Recovery

● Acetonitrile	3,000 lbs.
● Formaldehyde	37
● Methyl ethyl ketone	5
● Methyl isobutyl ketone	5

These were the only chemicals for energy recovery transfers for the Area for 1993.

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PART III

ARCHAEOLOGICAL RESOURCES

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Archaeological Resources in the Illinois River Bluffs Watershed Assessment Area

Introduction

Illinois has long been the subject of archaeological research. This interest stemmed initially from recognition of a rich and complex record of human settlement and cultures in and near the major river valleys in the state. However, not all areas within the state have an equal distribution of archaeological resources, and even within a single major stream drainage, such as the Illinois River, archaeological resources can be highly uneven in their distribution. As a result, investigation of archaeological resources can be concentrated disproportionately in a few resource-rich zones, while other reaches of the same drainage receive less systematic investigation. The central portion of the Illinois River drainage, extending from Peoria upstream nearly to the Big Bend, has received comparatively little archaeological attention in spite of the high probability that this reach of the Illinois River valley contains abundant prehistoric and historic archaeological resources. Numerous small streams are tributary to the Illinois River and enter the main valley from both east and west. The Illinois River flood plain is relatively wide, and there is considerable topographic relief, contributing to microenvironmental variability and richness in both faunal and botanical resources. The uplands away from the main valley include numerous end and ground moraines, wet and mesic prairies, and hardwood forest groves which also contributed to a varied landscape, especially before Euro-American settlement. In short, the abundance and variety of natural resources in the Illinois River Bluffs Assessment Area Watershed (IRBAAW) should result in a rich and diverse record of prehistoric and historic use of the region. However, the archaeological resources in the region do not appear to be as abundant as in immediately adjacent upstream and downstream reaches in the Illinois River drainage. Whether these differences in site abundance are due to actual prehistoric and historic use of the region, or whether the apparent differences among regions are the result of less intensive archaeological investigation, will be explored further in subsequent discussions.

Over the past century, archaeologists have developed a framework of cultural history for the 12,000 years of human occupation that has been documented in the state (Table 3-1). In the process of constructing this framework, archaeologists have developed and contributed to a still-growing body of knowledge about human culture and earth history. Using interdisciplinary and evolutionary approaches, archaeological research has contributed to our understanding of both present and past climate, plant and animal communities, and landscapes. In our present framework, Illinois culture history has been

Table 3-1. Chronological Framework for Illinois Culture History

Period	Subperiod	Calendar Years (Dates indicate beginning of period)
Historic	Postwar	A.D. 1946
	Urban Industrial	A.D. 1901
	Early Industrial	A.D. 1871
	Frontier	A.D. 1841
	Pioneer	A.D. 1781
	Colonial	A.D. 1650
	Native American	A.D. 1650
	Unidentified	A.D. 1650
Protohistoric		A.D. 1500
Upper Mississippian	Oneota	A.D. 1400
Mississippian		A.D. 900
Woodland	Late Woodland	A.D. 300
	Middle Woodland	200 B.C.
	Early Woodland	1000 B.C.
		1000 B.C.
Archaic	Late Archaic	3000 B.C.
	Middle Archaic	6000 B.C.
	Early Archaic	8000 B.C.
		8000 B.C.
Paleo-Indian		10000 B.C.
Prehistoric	Indeterminate	10,000 B.C. - A.D. 1650

divided into a series of temporal periods. Each period is associated with fundamentally different cultures and ways of life, as indicated by the artifacts that are the remains of human habitation. The basic unit of study in archaeological research is the site--a location where artifacts are found. Some sites offer evidence of occupation by more than one group. When these units of divergent occupation are identified on a site, they are referred to as "components" of that site. A very favorable location might have been used over several millenia and could be referred to as a "multi-component" site. Documentation of sites associated with various temporal periods, and study of the distribution of sites on the landscape, provides opportunities to refine our understanding of the past and to investigate how human cultures have developed and adapted to changing environmental and social conditions.

To the best of our present knowledge, human history in Illinois begins with the arrival of Native Americans during the terminal stages of the last glaciation. During the Paleo-Indian period, people lived in environmental conditions very different from any found in the state today. This initial period of human settlement was characterized by a cold and moist climate, coniferous forests and presence of several animal species that are either extinct (mammoth and mastodon, for example) or which now inhabit regions farther north. Paleo-Indian sites as a rule are rare, small, and have few artifacts. Based mainly on research in other regions of North and South America, we infer that Paleo-Indian people were hunters and gatherers that were completely dependent on seasonal availability of resources for their survival.

During the Archaic period, more modern climatic conditions prevailed, with plant and animal communities found at or near where they are today. During this period (8000-1000 B.C.), Native Americans continued their hunting and gathering practices, but by the end of the period were cultivating several native plants for seeds, following a systematic practice of horticulture. In and near many of the larger stream valleys, larger and more permanent communities are found during the Middle Archaic subperiod. These more substantial sites served as bases from which people embarked on hunting and gathering trips into upland or other settings for the purpose of acquiring specific types of resources. Between about 6000 and 2000 B.C., there is a period of markedly warmer and drier conditions which led to the establishment of extensive prairie vegetation communities in the interior of the state, especially in low-relief upland areas. During this time of warmer and drier conditions, Native American settlements appear to be found closer to streams or other permanent water bodies.

Characteristics of the Woodland Period include greater dependence on cultivated plants and the establishment of long-lasting villages that are often associated with construction of mounds that served as cemeteries, elaboration of long-distance trade networks, and widespread use of pottery vessels. During the Middle Woodland subperiod, mound construction and long-distance trade was very elaborate, resulting in a period of pan-regional social integration associated with indications of social differentiation. During the Late Woodland subperiod, native plants with starchy seeds (such as goosefoot, erect

knotweed and maygrass) were cultivated or encouraged in small plots, corn became a food staple for the first time, and the bow-and-arrow was the weapon of choice, largely replacing the spear thrower.

During the Mississippian Period we see development of socially and economically complex societies. There is strong emphasis on introduced cultivated crops, especially corn and squash, as well as continued use of the native plants that we now identify as weeds. A powerful elite social class oversaw construction of monumental public works projects, including plazas and large earthen mounds in the center of larger towns. Mississippian culture spread throughout the Mississippi River valley and its tributaries and into the southeastern United States. Artistic styles and cultural materials associated with Mississippian cultures are found in virtually all portions of the state and throughout the American Southeast. This cultural adaptation affected many people located well outside its original heartland in the central Mississippi River valley.

In general, Upper Mississippian and Protohistoric cultures are poorly documented. Most sites of these time periods appear to be concentrated in major river valleys, but there is some indication of dispersed communities in upland and small valley settings. Some elements of Mississippian culture, such as corn gardening, persisted into these later times, but social differentiation and large-scale earthwork construction diminished greatly by A.D. 1400. Cultivated beans were added to the diet.

The arrival of the French in the late 17th century provides the first written accounts of Native American lifeways in Illinois. With this record comes the identification of specific Native American tribes and more detailed documentation of everyday life. Historic Native American sites are generally rare but provide important information on lifeways that were in rapid transition as a result of cultural contact and conflict. Historical documents also provide information about European and Euro-American lifeways on the frontier. Few sites are recognized for the Colonial Historic subperiod, but increasing European and Euro-American influences and settlement provide more cultural material and sites associated with the Pioneer Historic subperiod. The increasing Euro-American presence also resulted in more conflicts between Native Americans and European settlers. The conflicts culminated in the early 19th century with the Black Hawk War, after which tribes were required to move west across the Mississippi River. By the beginning of the Frontier Historic subperiod, Native American settlements in Illinois are generally absent, and Euro-American settlement has spread throughout the state.

Written history does not adequately record many aspects of daily life; instead, written histories often focus on singular events or persons. We have learned that archaeological investigation can provide insight into past cultural behavior that supplements and expands the written historic records. Increasingly, archaeologists are exploring the combined written and material record of the past two centuries to provide a more comprehensive interpretation of human history, including both Native American and Euro-American cultures.

Archaeological Resources of the Illinois River Bluffs Watershed Assessment Area

When compared with some other regions in Illinois, archaeologists have conducted a comparatively small amount of work in the Illinois River Bluffs Watershed Assessment Area (IRBWAA). Much, though not all, of work has stemmed from requirements for compliance with Federal and State cultural resource management laws that may require survey, or in some cases excavation, of sites affected by development and construction projects. In addition, research-oriented archaeological investigations, including large-area systematic surveys as well as site-specific targeted excavations, serve to complement the projects conducted solely for the purpose of compliance with Federal or State regulations. Still, virtually all of the research to date in this region has consisted of identifying and documenting sites through systematic and nonsystematic surveys, which is a necessary first stage in conducting either research-oriented investigation or compliance-related work. However, there are some notable exceptions to this trend, and these will be discussed in more detail in appropriate sections below.

One factor affecting our current state of understanding of archaeological resources is that not all watershed regions have received equal attention. Even within a single watershed region, both industrial development and archaeological research interests--the two major factors that provide impetus to study of cultural resources--have waxed and waned over time. The record of archaeological research in the IRBWAA largely reflects the impact of Federally mandated cultural resource management studies that post-date the 1960s. Expansion of Peoria and its suburbs, construction of new or expanded transportation routes, and systematic survey of state parks and conservation areas for the purpose of long-term cultural resource management have all resulted in documentation of numerous sites within the IRBWAA. Some of these sites have been excavated and provide more information about past lifeways. Major sources of information about sites within the IRBWAA include 1) systematic survey of large contiguous tracts of state-owned parks and conservation areas (Hassen and Schroeder 1987); 2) relatively unsystematic surveys conducted under the auspices of the Historic Sites Surveys during the early 1970s (Jelks 1971, 1972; Wiant et al. 1975) bankline surveys along the Illinois River conducted by the Illinois Museum; and 4) systematic survey of the Interstate 39 highway corridor (Warren 1992). The first three sources provide considerable information about site distributions within and adjacent to the Illinois River valley, while the latter project provides contrasting information on an upland tract dominated by former prairie ecology. Additional sources of archaeological data include late 19th- and early 20th-century nonsystematic surveys that focused largely on mounds and large villages, nonsystematic surveys by private individuals, numerous small and scattered systematic survey undertakings, and occasional large-scale excavations at specific sites. In spite of the relatively low intensity of systematic survey and excavation, the IRBWAA has proved to be a region relatively rich in archaeological resources. These resources have provided information on a variety of research issues and have the potential to continue to

contribute to our understanding of the past.

The IRBWAA has had a relatively long but sporadic history of archaeological investigation. A number of mound sites are recorded, and while these cannot usually be assigned to specific time periods without excavation, many of them are attributed to Middle Woodland cultures. The presence of these mound sites and associated large villages promoted initial interest in the region. The region was first investigated in the late 19th and early 20th centuries by a combination of amateur and professional archaeologists (Adams 1880, 1883; Peet 1889; Tiffany 1883). Most of this early work concentrated on mound excavations, and much of it was concentrated in the southern part of the IRBWAA in Peoria County. However, relatively few mound sites have been reported for this region compared to areas just upstream and downstream along the Illinois River (the Starved Rock area and Fulton County, respectively), so as a result, comparatively little work was conducted from the outset of systematic archaeological investigations. From the 1930s through the 1960s, only sporadic work was conducted in the region. Ethel Schoenbeck of the Peoria Academy of Science was notably active in the region, documenting and conducting excavations at several sites, including the Steuben Village in Marshall County (Schoenbeck 1948, 1949). These collections were later analyzed by Fowler (1950) as part of his regional synthesis of ceramic types. During this period, John McGregor documented several mound and large village sites, some of which were the focus of brief excavations, and Spooner (1939) documented the locations of several early historic Native American sites in the Peoria Lake area.

The first professional, large-area systematic site surveys were conducted in the IRBWAA under the auspices of the Historic Sites Surveys in the early 1970s (Jelks 1971, 1972; Wiant et al. 1975). Collectively, these surveys documented over 50 sites of all time periods within the region, most of which were located within or adjacent to the Illinois River valley. After implementation of Federal cultural resource management legislation in the 1960s, archaeological information from the region increased significantly. These laws often require archaeological surveys or site evaluations of areas to be affected by federally funded development or construction projects such as highways or power plants. Some of the institutions that have been major contributors to this information base through contract archaeology projects include the Illinois State Museum Society, the Illinois Transportation Archaeology Research Program and its predecessors at the University of Illinois, and Dickson Mounds Museum. Most of the contractual archaeological work in the region has been required because of expansion of existing highways or construction of new roads. As a result of these and other projects, records maintained with the Illinois Archaeological Survey site files indicate about 1.9% of the total IRBWAA area has been subjected to systematic archaeological survey (Figure 3-1). This is a relatively low percentage of the total area within the region, and it reflects both a low level of industrial/economic development in this largely rural region as well as a lower intensity of archaeological research in the area.

However, not all archaeological research in the region has been driven by economic

concerns. Information from several site excavations and surveys have been incorporated into masters' theses (Houart 1973), dissertations (Braun 1977; Montet-White 1968; Morse 1963), regional syntheses (Montet-White 1965), and regional predictive models (Lewis and Murphy 1981). In addition, major excavations conducted at the Rensch Village site in Peoria County (McConaughy 1993), the Hildenmeyer site in Tazewell County, and at several sites on the Interstate 39 right-of-way (Ferguson 1992) have added considerably to our understanding of the history and prehistory of the IRBWAA. Both scholarly and cultural resource management projects continue to document and evaluate sites, and the archaeological data base for the region is growing annually.

Because the surveys shown in Figure 3-1 are the result of many individual projects conducted for a variety of compliance and research purposes, their distribution and the corresponding distribution of known archaeological sites in the IRBWAA (Figure 3-2) is notably uneven. However, all large-area systematic surveys that have been conducted in the region have documented many sites. The composite result of these efforts are two major clusters of sites (Figure 3-2). One linear cluster along the east edge of the IRBWAA boundary resulted from intensive survey of the Interstate 39 highway corridor (Ferguson 1992; Schroeder and Warren 1992; Warren 1992). The other large, diffuse site cluster mainly reflects site locations within and adjacent to the Illinois River valley. These two site clusters provide potentially complementary information about upland and riverine adaptations, respectively. The distribution of temporal components represented in the two clusters can be compared to provide a more complete interpretation of human adaptations in the IRBWAA through time. It should be understood that the collective survey areas and site distributions do not necessarily comprise a representative sample of the entire region. However, these data do permit some tentative interpretations to be drawn regarding historic and prehistoric settlement patterns and landscape use in the IRBWAA region.

Based on information recorded in the electronic data base of the Illinois Archaeological Survey site files as of 1 October 1997, a total of 339 archaeological sites has been recorded in the IRBWAA (Figure 3-2). These range in age from Early Archaic through the Postwar Industrial periods (Figures 3-3 through 3-23). This number is small compared to other drainages, reflecting the lower intensity of archaeological work in this region. Of this total number of sites, 175 (51.6%) have been recorded simply as unidentified prehistoric sites (Figure 3-3), and are not assignable to a more specific time period. Several of the sites have more than one temporal period or component present. The total number of recorded components is 383 (Table 3-2). Of the recorded components, almost half (175 or 45.7%) are unidentified or culturally indeterminate prehistoric sites (Figure 3-3); no temporally or culturally diagnostic artifacts have been found at these sites. Their distribution mirrors the total number of sites, with both the Illinois River and Interstate 39 site clusters represented.

Though Paleo-Indian peoples most likely occupied the region, no components dating to this time period have been formally identified in the IRBWAA (Figure 3-4). Paleo-Indian

Table 3-2. Archaeological Resources in the Illinois River Bluffs Watershed Assessment Area.

Period	Subperiod	Calendar Years (Dates indicate beginning of period)	Number of Components
Historic	Postwar	A.D. 1946	9
	Urban Industrial	A.D. 1901	13
	Early Industrial	A.D. 1871	20
	Frontier	A.D. 1841	15
	Pioneer	A.D. 1781	2
	Colonial	A.D. 1650	0
	Native American	A.D. 1650	2
	Unidentified	A.D. 1650	40
Protohistoric		A.D. 1500	0
Upper Mississippian	Oneota	A.D. 1400	2
Mississippian		A.D. 900	16
Woodland	Late Woodland	A.D. 300	15
	Middle Woodland	200 B.C.	16
	Early Woodland	1000 B.C.	3
	Unidentified	1000 B.C.	13
Archaic	Late Archaic	3000 B.C.	3
	Middle Archaic	6000 B.C.	9
	Early Archaic	8000 B.C.	13
	Unidentified	8000 B.C.	24
Paleo-Indian		10000 B.C.	0
Prehistoric	Indeterminate	10000 B.C.	175
Total			383

sites are extremely difficult to locate because they often have very low artifact density, a factor that may help to account for their apparent absence in the region.

Sites with components assignable to the undifferentiated Archaic period (Figure 3-5) are more numerous and account for 24 of the recorded components (6.3%). All of these sites are located within the diffuse site cluster along the Illinois River valley, and all of these sites were reported as a result of the Historic Sites Surveys. These sites produced artifacts identifiable to the Archaic period (8000 to 1000 B.C.), but were not assigned to a more specific subperiod within this broad time span. After these surveys, finer temporal affiliation was provided for Archaic period sites, with components assigned to one of three subperiods. However, only 13 (3.4%) sites with Early Archaic components (Figure 3-6), nine sites (2.3%) with Middle Archaic components (Figure 3-7), and three sites (0.8%) with Late Archaic components (Figure 3-8) have been identified. Almost all of the sites assignable to Archaic subperiods are located in the Interstate 39 survey corridor.

Within this corridor, which intersects a variety of upland physiographic settings, there is differential distribution of Early and Middle Archaic period sites. Early Archaic sites tend to be located on higher elevations on end moraines, farther from permanent streams, and closer to small upland wetland areas. Middle Archaic sites are located closer to permanent streams or on lower elevations on ground moraines. This distributional change was interpreted as evidence of human responses to environmental change during the mid-Holocene (Middle Archaic period). During this time span, extensive prairies were established, warmer and drier climatic conditions prevailed, and there may have been a lower water table, resulting in drying of many upland water sources removed from permanent streams. Prehistoric populations apparently altered their settlement strategies in response to reduced availability of crucial resources (Ferguson 1992; Warren 1992). The extent to which mid-Holocene warming and drying conditions affected prehistoric settlement patterns in the main Illinois River valley within the IRBWAA is unknown at this time. However, studies in other regions suggest that large stream valleys and adjacent bluffs were more environmentally stable, which contributed to an increase in human settlement stability in the main valley during this period (see Stafford 1991).

Sites with undifferentiated Woodland period components (Figure 3-9) account for 13 (3.4%) of the recorded components. They are comparable to the undifferentiated Archaic period sites with a thin distribution throughout the diffuse Illinois River site cluster. Early Woodland sites (Figure 3-10) are difficult to identify, and this time period is poorly represented in this and many other regions in the state. Early Woodland sites account for only three (0.8%) of the recorded components. Middle Woodland components (Figure 3-11) are more numerous, accounting for 16 (4.2%) of the reported components. Several of these sites are mounds, though extensive villages are also reported. Late Woodland sites (Figure 3-12) are almost equal in number, with 15 components recognized (3.9%). Some of the Late Woodland sites may also contain mounds. The Mississippian period (Figure 3-13) is moderately represented in the IRBWAA, with 16 components identified, accounting for 4.2% of the total. Only two sites (0.5%) have been recognized as

containing definitive Upper Mississippian components (Figure 3-14). No sites have been reported with protohistoric period components (Figure 3-15).

Almost all of the sites assigned to Woodland and Mississippian subperiods are located within or on the uplands immediately adjacent to the Illinois River valley in the IRBWAA. This observation strongly reflects panregional cultural developments which indicate that Woodland and Mississippian peoples focused their settlements and subsistence activities mainly on larger stream valleys. Upland areas certainly continued to be utilized, but the intensity or duration of settlement in upland settings probably decreased markedly relative to the Archaic period. Woodland and Mississippian period settlement models for the region suggest that upland areas remote from major streams were used primarily for short-term or seasonal extraction of specific resources (Lewis and Murphy 1981).

Four sites have been the subject of major excavations. The Rench Village site (McConaughy 1995) is a large multicomponent village at the base of the Illinois River bluffs just north of Peoria. It was partially excavated due to highway construction impacts. Multiple structures and pit features associated with Middle Woodland, Late Woodland, and Mississippian periods were documented. The botanical remains from Rench provide much information on subsistence changes through time, and ceramic and lithic artifacts have added to our understanding of culture history and intraregional interactions during the Woodland period. The Steuben Village in Marshall County is an extensive Middle-Late Woodland mound and village site which was partially excavated by both amateur and professional archaeologists in the 1950s. The artifacts from these excavations were subsequently analyzed by Dan Morse (1963) as part of his dissertation research at the University of Michigan. The Luthy mounds site (Tazewell County) is a probable Mississippian site on the bluffs of the Illinois River; salvage excavations in the late 1950s yielded several burials, but no additional professional work has been done on the site (Beeson 1960). Finally, recent Illinois State Museum excavations at a site in Peoria County have documented the probable remnants of a Middle Woodland burial mound; analyses of these materials are still in progress.

Collectively, Historic period components are relatively abundant in the IRBWAA, accounting for 101 (28.7%) of the recorded components. More than one-third ($n = 40$; 10.4% of total) of the Historic period components are undifferentiated and cannot be assigned to a specific temporal subperiod (Figure 3-16). Figure 3-16 indicates that all Historic period sites in the Interstate 39 corridor are unassigned to specific subperiods. However, this figure is based on early information that is now out of date; the information in Table 3-2 reflects more recent assignment of Historic period components to more specific subperiods. Unfortunately, these data could not be visually displayed in Figures 3-17 through 3-23.

Only two sites contain Historic Native American components (Figure 3-17). The low representation of these components is most probably due to the combined effects of

nonsystematic sampling and the lack of specific archaeological signatures for a time period that has a very sparse material expression. One of these sites is represented by a small surface collection that includes stone-working refuse and a probable English gun flint. The other site represents the probable location of Old Peoria, based on maps and limited surface finds. The site files now indicate that Old Peoria has been destroyed by urban expansion of Peoria city. However, remnants in the form of house foundations or pit features may still be preserved. Additional Historic Native American sites may yet be found here, especially given that the region, specifically around Peoria Lake, was occupied historically by one or more segments of the Illinois Confederation of related tribes.

There is evidence for a rather high degree of territorial variation and movement of various segments of the loose confederation of up to 12 tribes that comprised the Illinois Confederacy during the 17th and 18th centuries (Bauxar 1978; Callender 1978). High tribal mobility may also have characterized the Protohistoric period and may contribute to the difficulty we have in identifying Protohistoric period sites. Between about 1650 and 1700, the IRBWAA region was occupied by the Kaskaskia, whose principal village was upstream of the region at Starved Rock. In 1691, the Kaskaskia and Peoria groups, supplemented by small segments of Miami and Shawnee, established a new settlement at Pimiteoui on Peoria Lake. In 1700, the Kaskaskia abandoned this village to move south to the American Bottom, leaving the Peoria tribe, which alternated settlement between Pimiteoui and Starved Rock until the late 18th century. The remnants of the Peoria tribe then moved south and eventually west to Kansas and finally to Oklahoma. When the area was abandoned by the Peoria, it was settled by small groups of Potawatomi, who remained in the area from about 1770 to 1800. After 1800, the growing numbers of Euro-American settlers forced the remnant Native American groups to abandon the region and ultimately move west. This relatively large degree of tribal group movement during the early Historic period is attributed mainly to the twin influences of economic interactions induced by the fur trade and increasing conflict with Euro-American settlers.

No Historic Colonial components (Figure 3-18) have been identified in the region, probably because of the ephemeral artifact signature that these sites display. Historic Pioneer components (Figure 3-19) are scarce; only two (0.5%) have been identified to date in the IRBWAA. Both of these sites were occupied into later historic subperiods. Historic Frontier components (Figure 3-20) are considerably more numerous (n=15; 3.9% of components). These sites are located in both valley and upland settings, with upland sites strongly associated with the growing influence of overland transportation routes, especially the rail system. Historic Early Industrial components (Figure 3-21) comprise 5.2% of the total number of components (n=20), while Historic Urban Industrial components (Figure 3-22) number 13 (3.4% of components). Both of these periods show the same spatial distribution identified for the Historic Frontier subperiod and reflect longer occupation of established farmsteads and residences. With the exception of selected sites in the Interstate 39 corridor (see Schroeder and Warren 1992), few sites of these time periods have been investigated more intensively than the survey

documentation level. Historic Postwar components (Figure 3-23) are less frequent ($n=9$; 2.3%); sites of this age have only recently been systematically recorded. Many of the sites of this period have extant structures and are significant to local community histories. More recently, archaeologists have recognized the contribution that these sites can make to our understanding of historical and social processes, and they have been more systematically documented.

Little formal investigation has been conducted for the region as a whole using site distribution data, either in terms of Historic or Prehistoric period settlement pattern analysis. The site distribution data from the Historic Sites Surveys and other surveys formed the basis of a predictive model for prehistoric settlement for part of this region (see Lewis and Murphy 1981), and settlement systems for specific time periods have been incorporated into more recent survey and excavation reports (McConnaughy 1995). In spite of this lack of comprehensive analysis, the brief examination of the distributional data suggests possible avenues for future investigation.

Most of the temporal periods and subperiods show differential distribution of sites within the IRBWAA, especially with respect to upland and Illinois River valley settings. The Interstate 39 corridor studies have demonstrated that even in the upland prairie regions there is considerable variation in prehistoric settlement patterns, and this variation may be strongly linked to changes in paleoenvironment and paleoclimate. Changes in social organization and/or subsistence practices may underlie the strong trend through time of increasing settlement focus on the Illinois River valley portion of the region. This trend may begin as early as the Middle Archaic period, and is certainly expressed in the present data base throughout the Woodland and Mississippian periods. Of additional interest are differential settlement and economic patterns that become apparent in the later Historical subperiods as rural settlements are linked increasingly to regional and national economies (see Schroeder and Warren 1992) through rail and overland transportation routes. Though these trends are based on relatively small numbers of sites and generally nonsystematic and nonrepresentative surveys, the distributional changes are apparent at even this scale of analysis and should be investigated more formally through future research in the region.

Future archaeological site surveys are needed to correct for potential biases in the current data base resulting from nonsystematic survey. Additional work should be targeted toward systematic testing and survey of sites to complement the more extensive data base available in regions immediately upstream and downstream from the IRBWAA. If these difficulties can be overcome, the archaeological resources of the IRBWAA can continue to make significant contributions to our understanding of Illinois history and prehistory.

Acknowledgments

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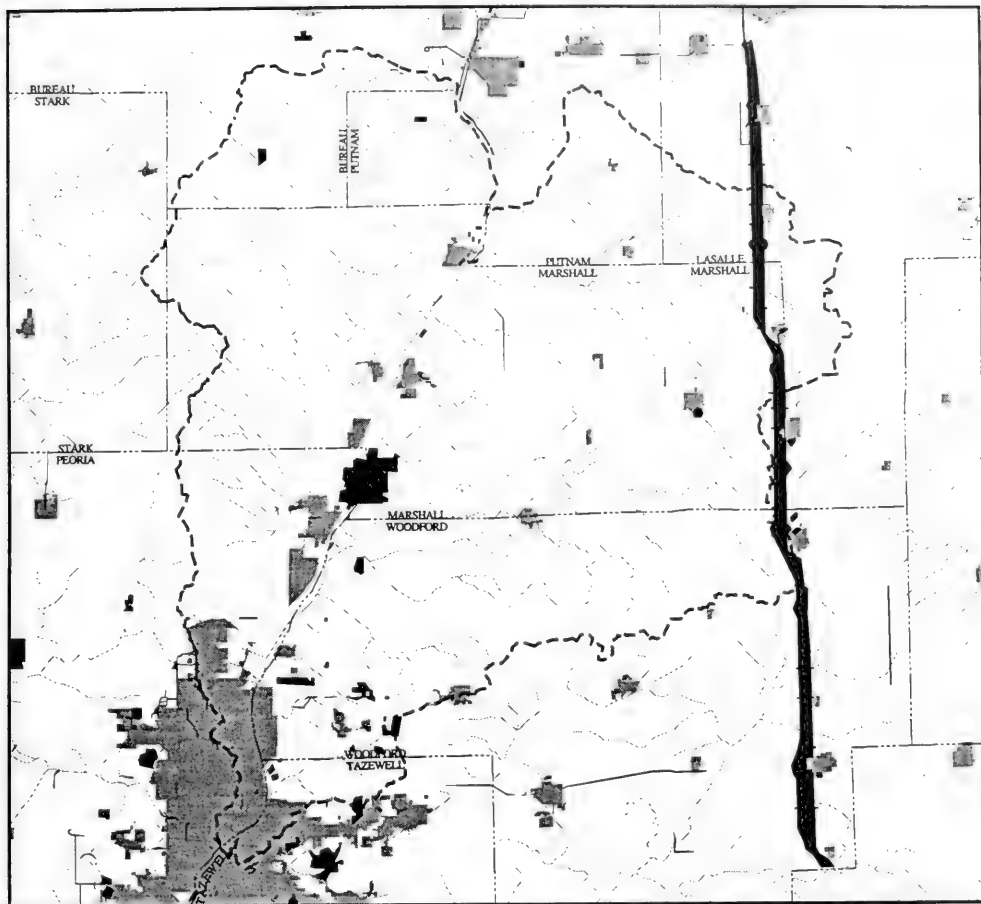
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■ Archaeological survey area

■ Municipal boundary

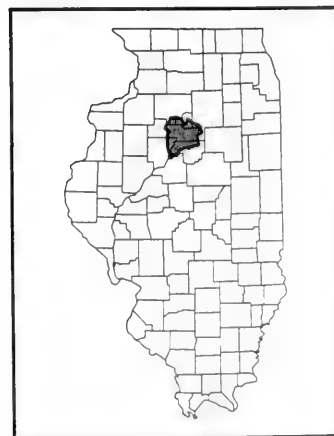
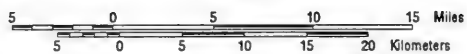
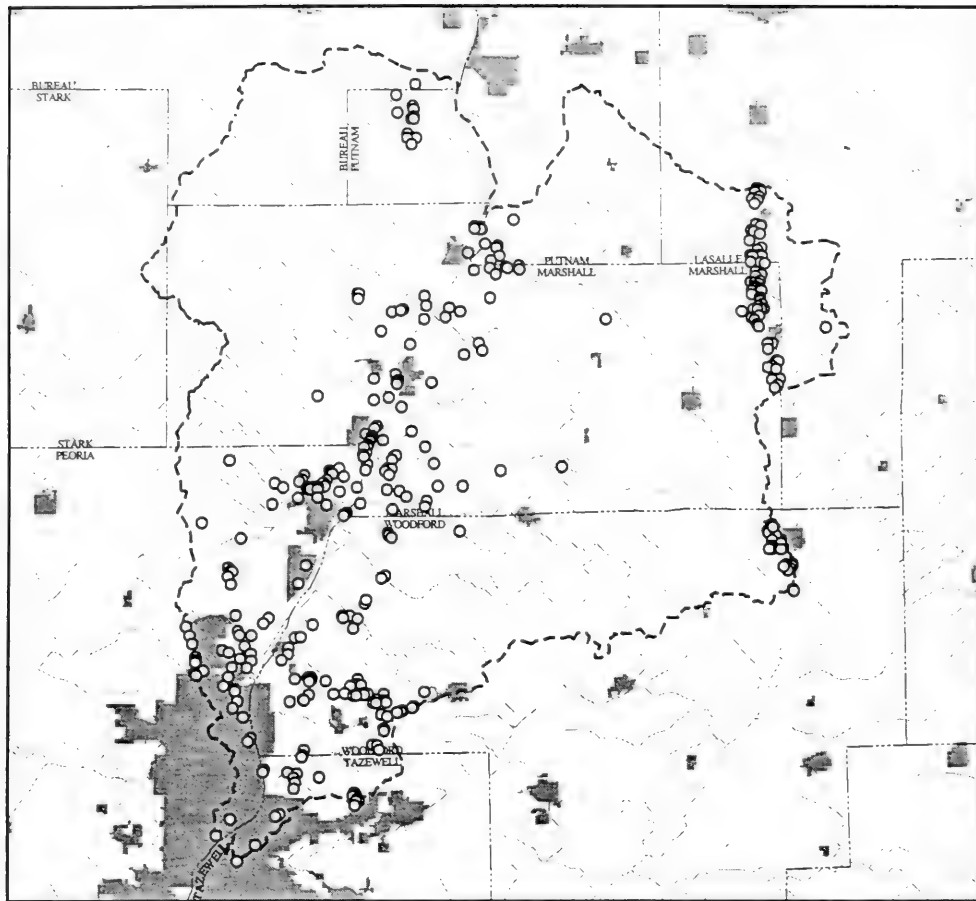


Figure 3 -1. Archaeological Survey Areas.

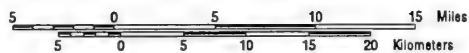
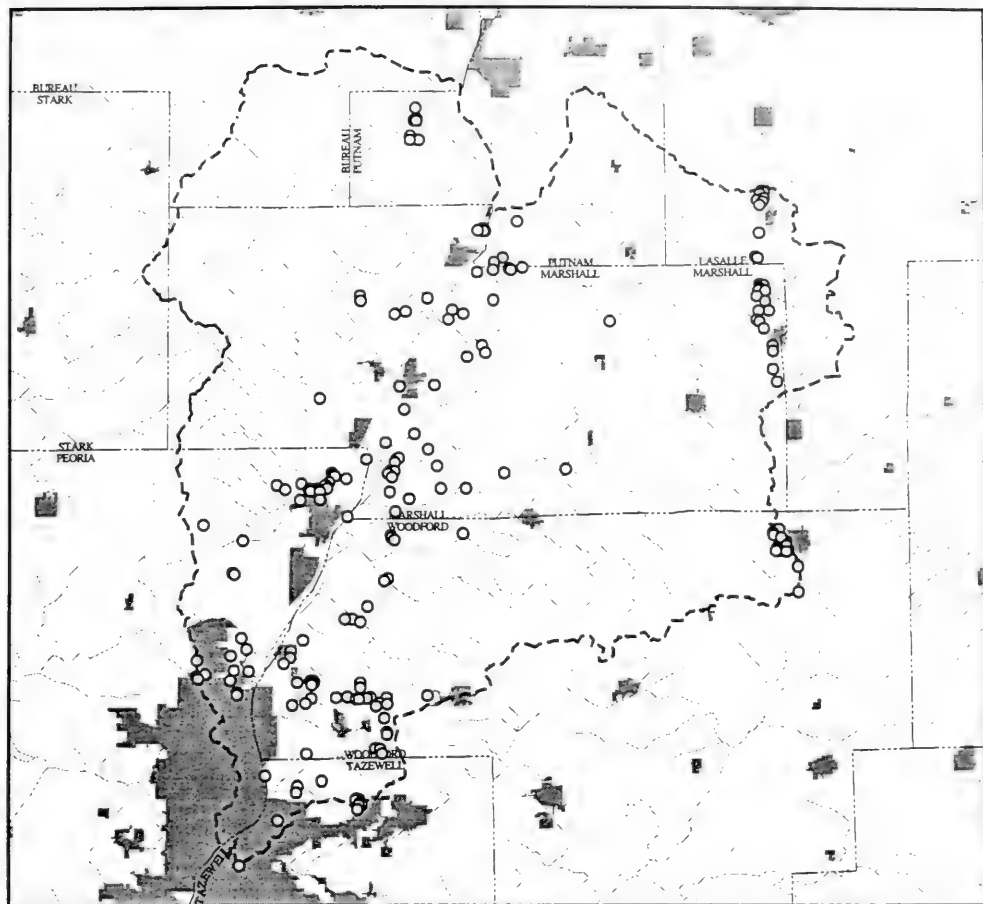


○ Archaeological sites

■ Municipal boundary



Figure 3 -2. All archaeological components.



○ Archaeological sites

■ Municipal boundary

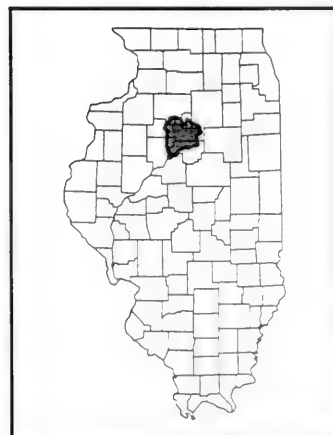
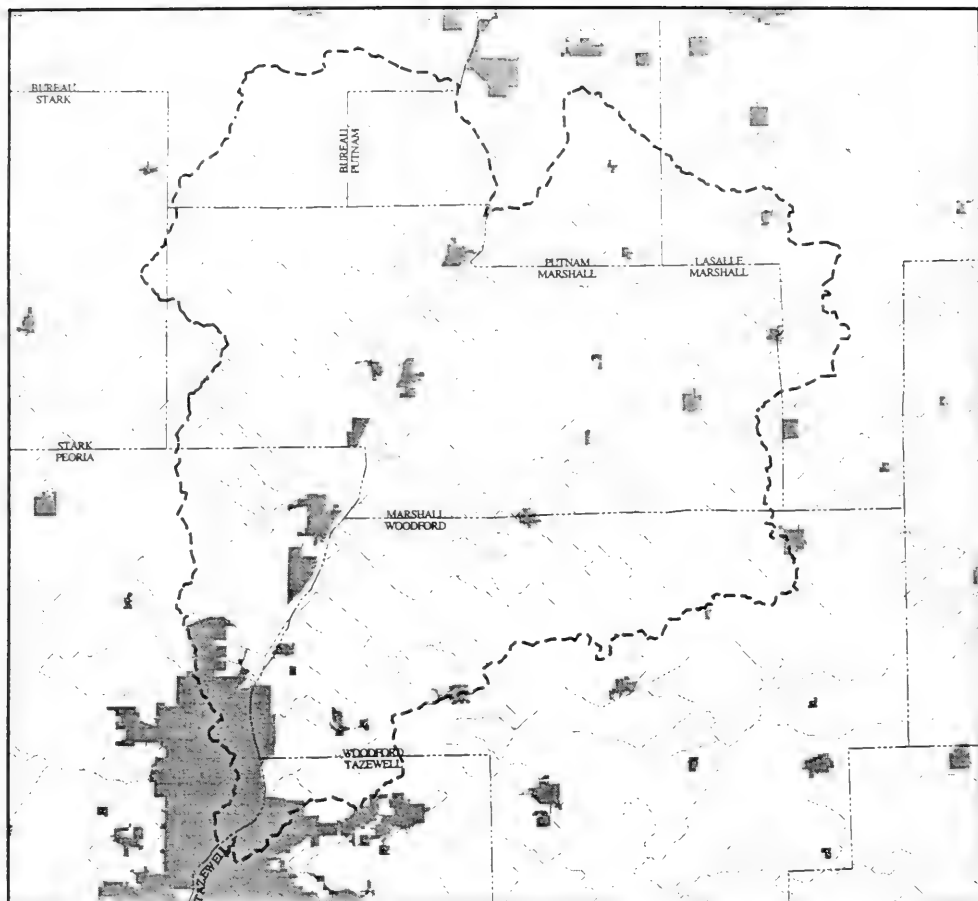


Figure 3 -3. Unidentified Prehistoric archaeological components.



5 0 5 10 15 Miles
5 0 5 10 15 20 Kilometers

○ Archaeological sites

■ Municipal boundary

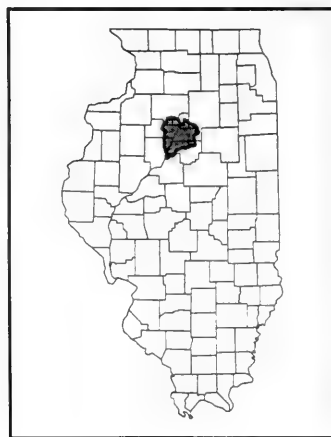
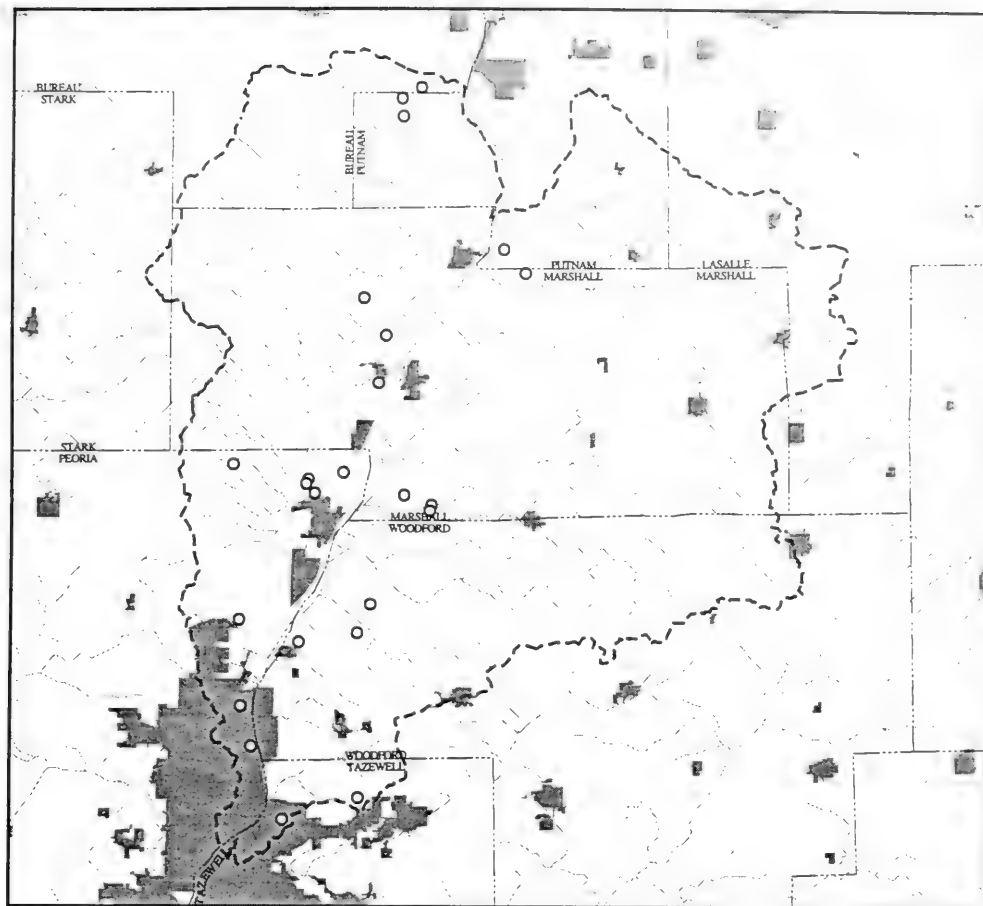


Figure 3 —4. Paleo-Indian archaeological components.

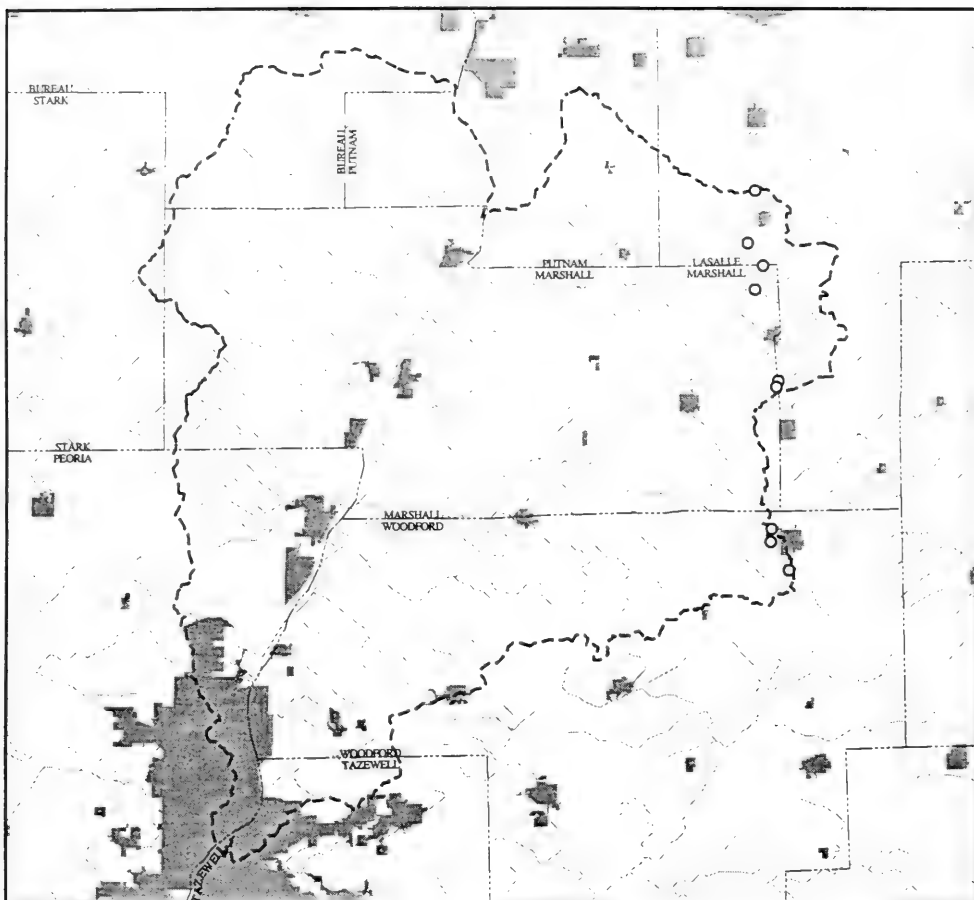


○ Archaeological sites

■ Municipal boundary



Figure 3 -5. Unidentified Archaic archaeological components.



○ Archaeological sites

■ Municipal boundary

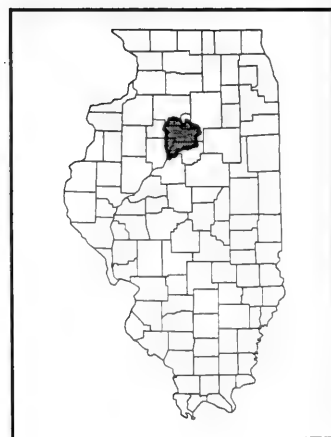
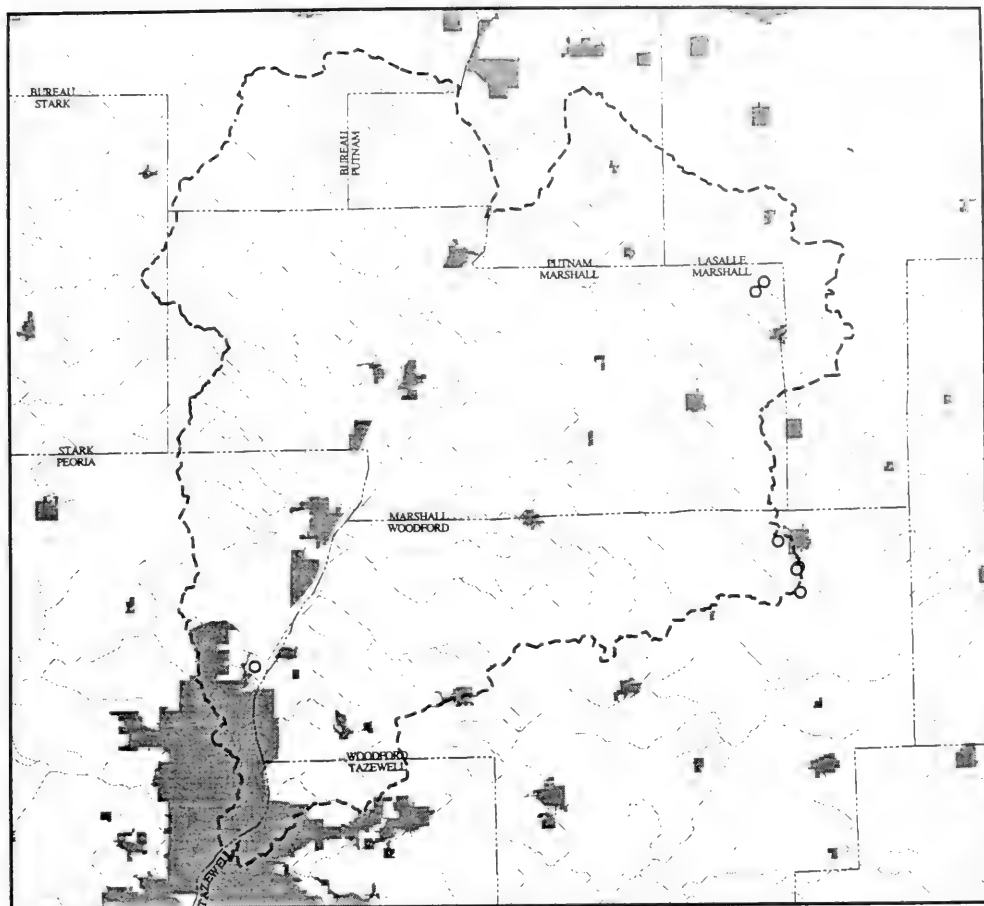


Figure 3-6. Early Archaic archaeological components.



○ Archaeological sites

■ Municipal boundary

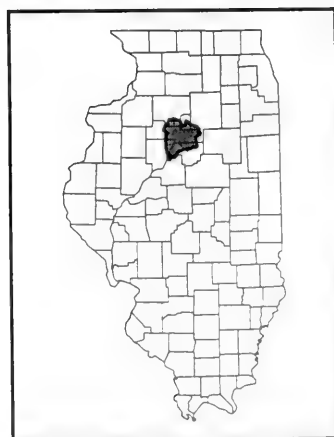
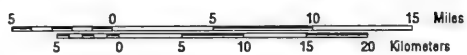
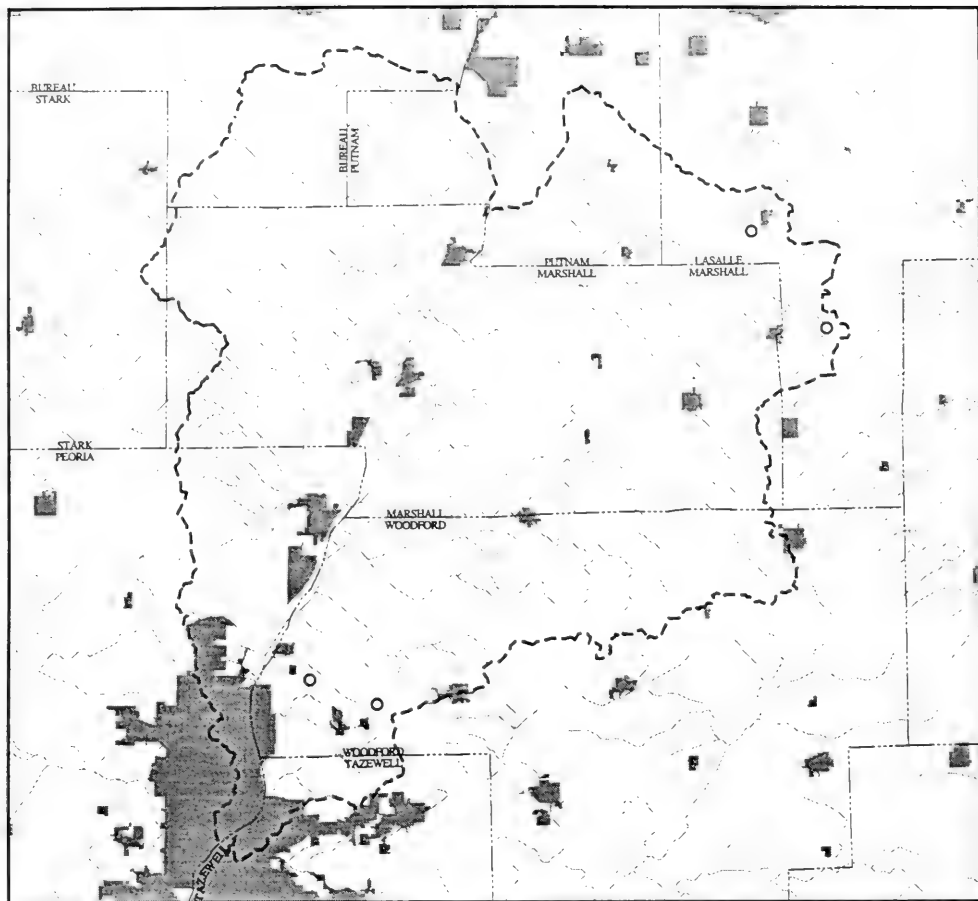


Figure 3 -7. Middle Archaic archaeological components.



○ Archaeological sites

■ Municipal boundary

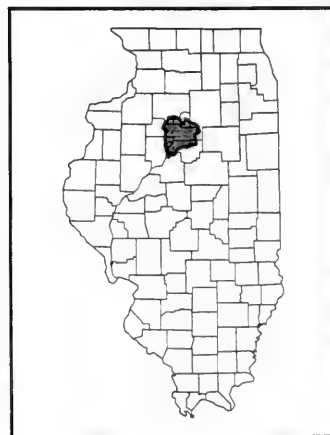
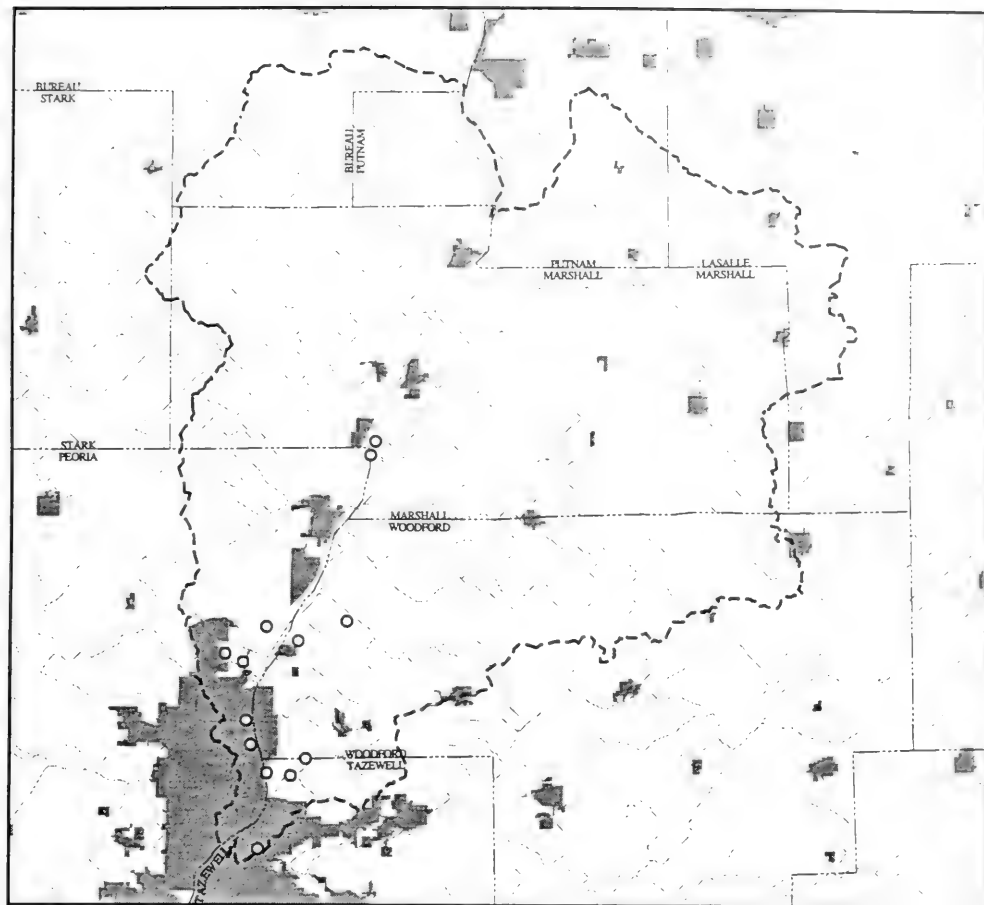


Figure 3 -8. Late Archaic archaeological components.

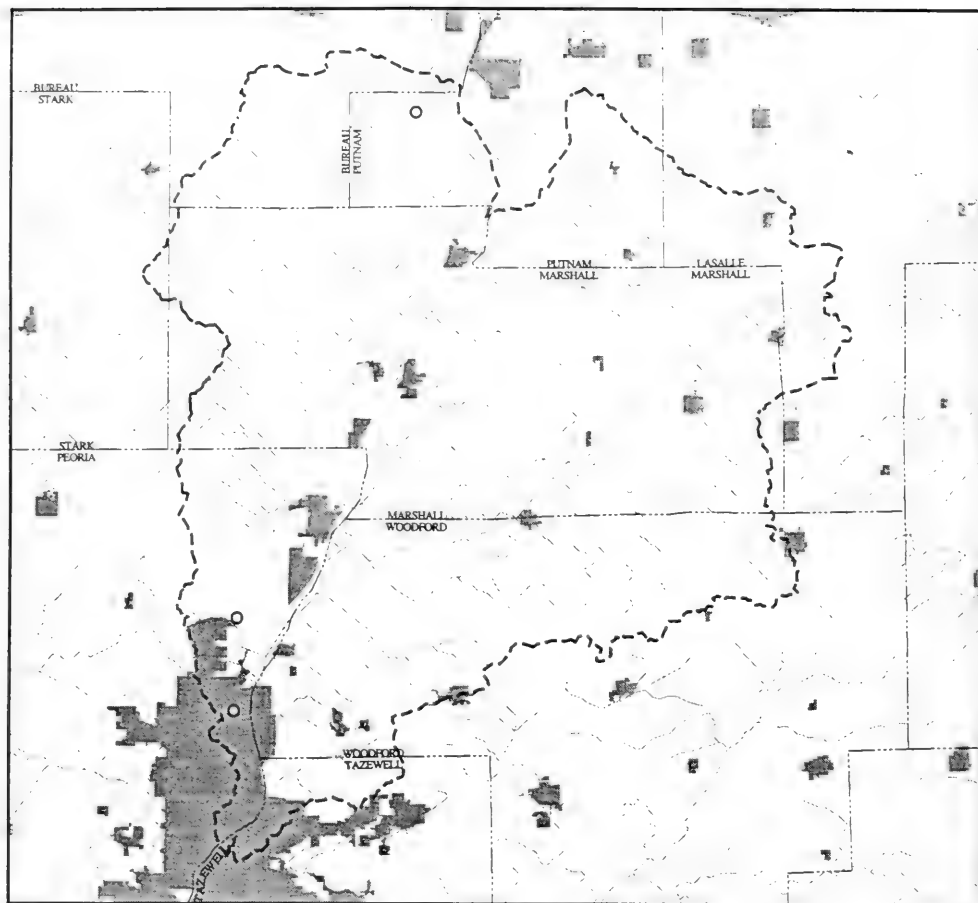


○ Archaeological sites

■ Municipal boundary



Figure 3-9. Unidentified Woodland archaeological components.

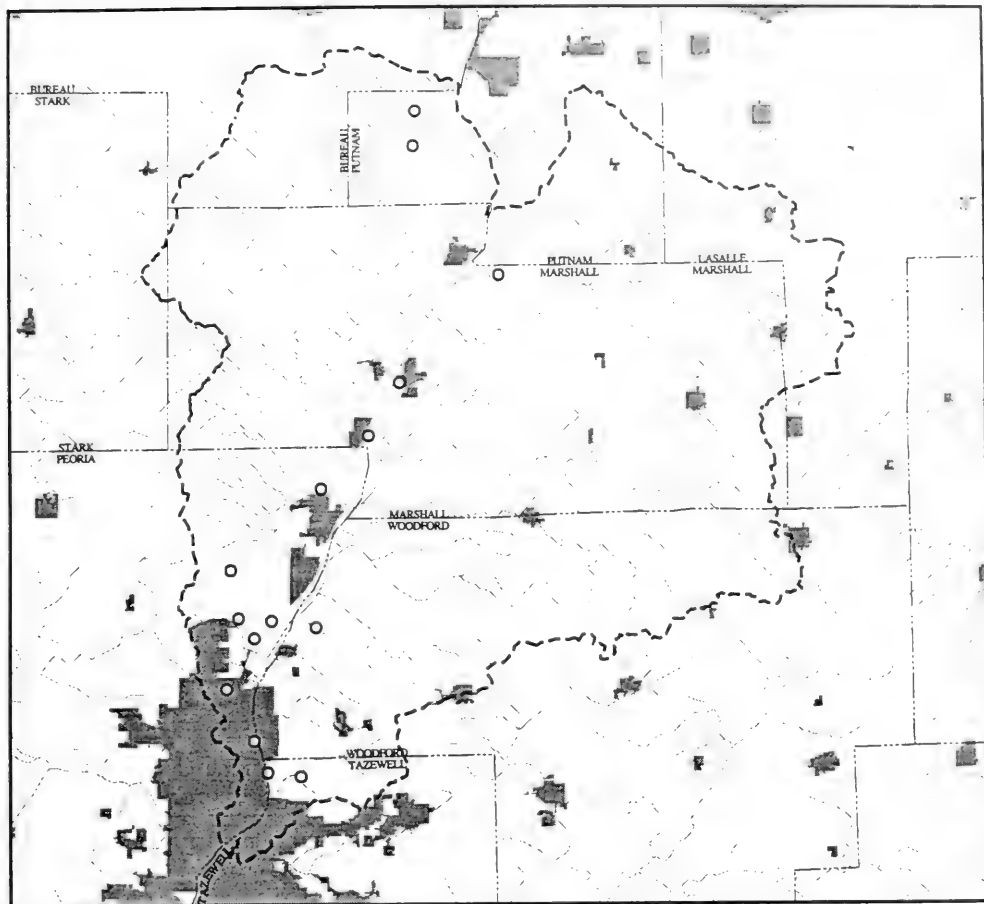


○ Archaeological sites

■ Municipal boundary



Figure 3 -10. Early Woodland archaeological components.



○ Archaeological sites

■ Municipal boundary

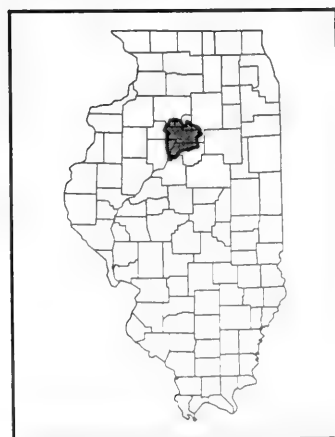
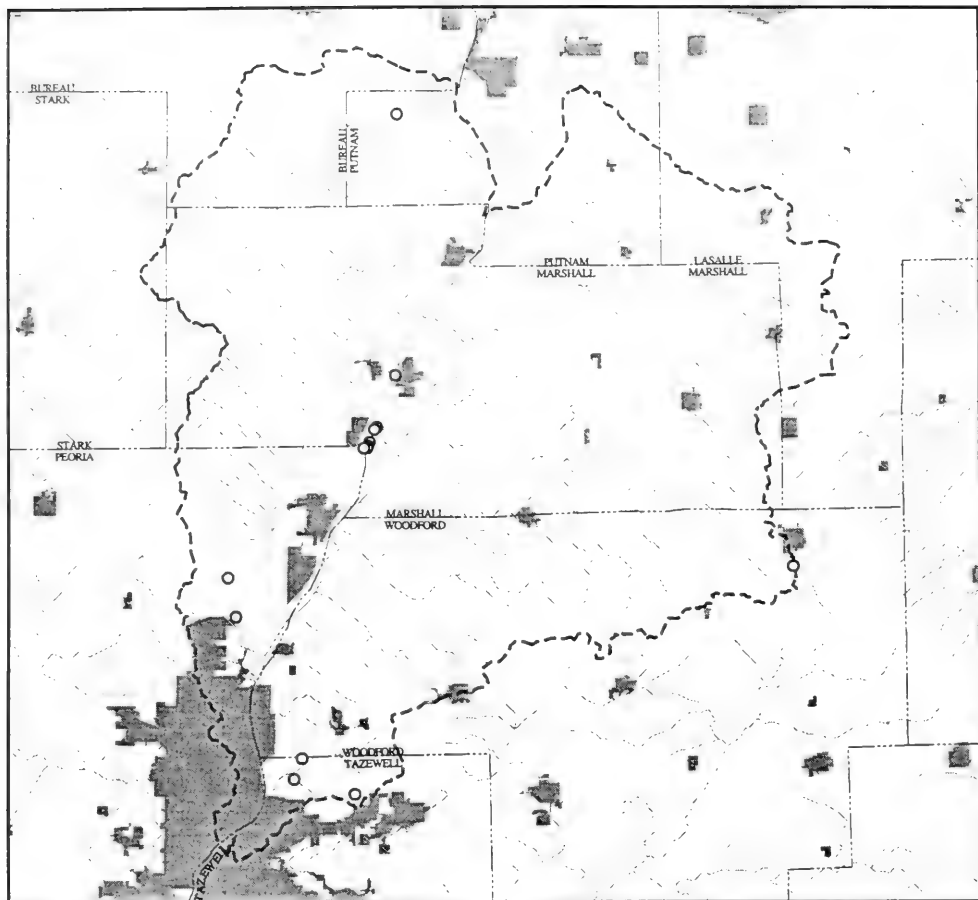


Figure 3-11. Middle Woodland archaeological components.

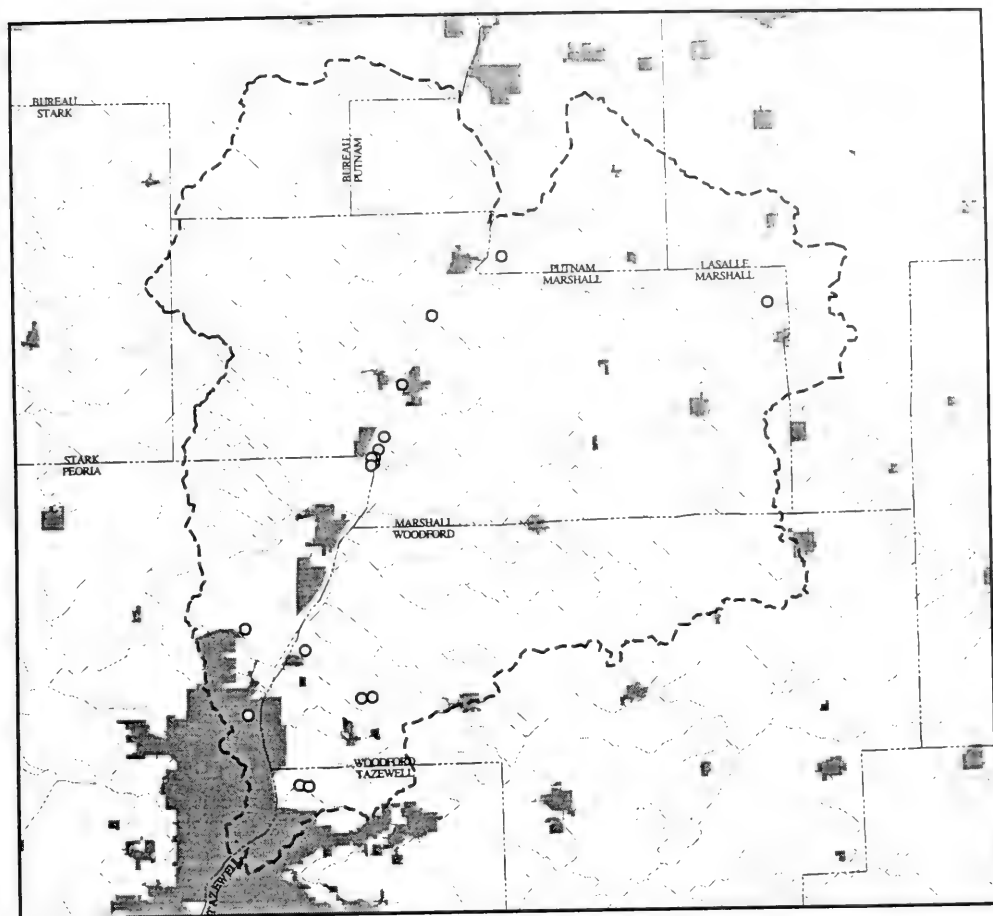


○ Archaeological sites

■ Municipal boundary



Figure 3 -12. Late Woodland archaeological components.

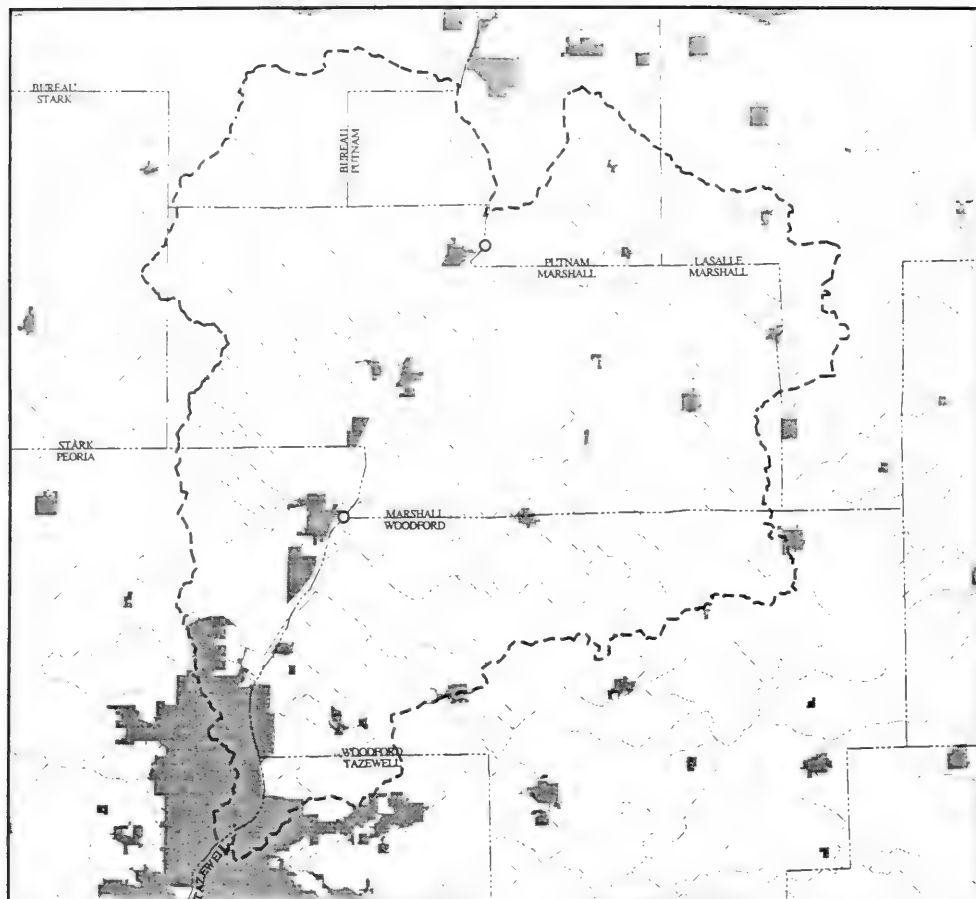


○ Archaeological sites

■ Municipal boundary



Figure 3 -13. Mississippian archaeological components.



○ Archaeological sites

■ Municipal boundary

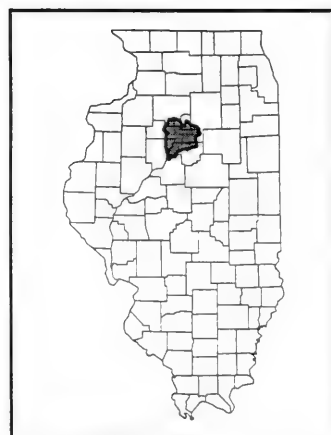
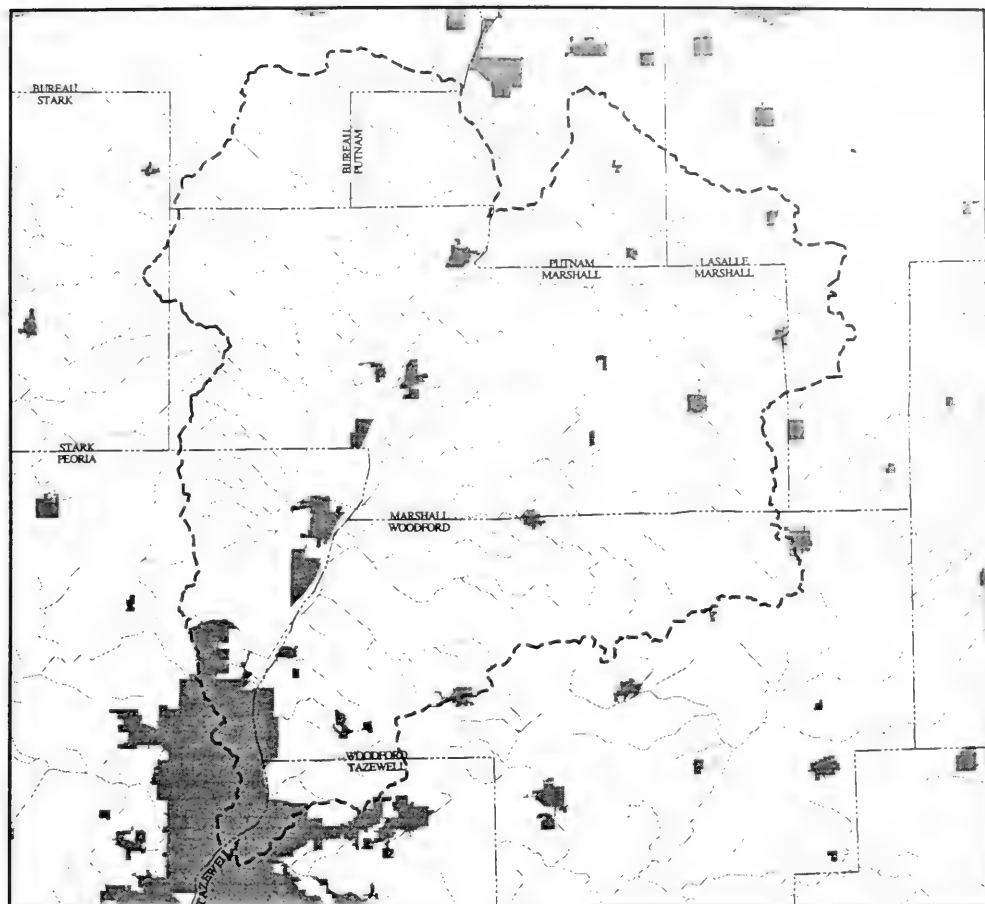


Figure 3 -14. Upper Mississippian archaeological components.

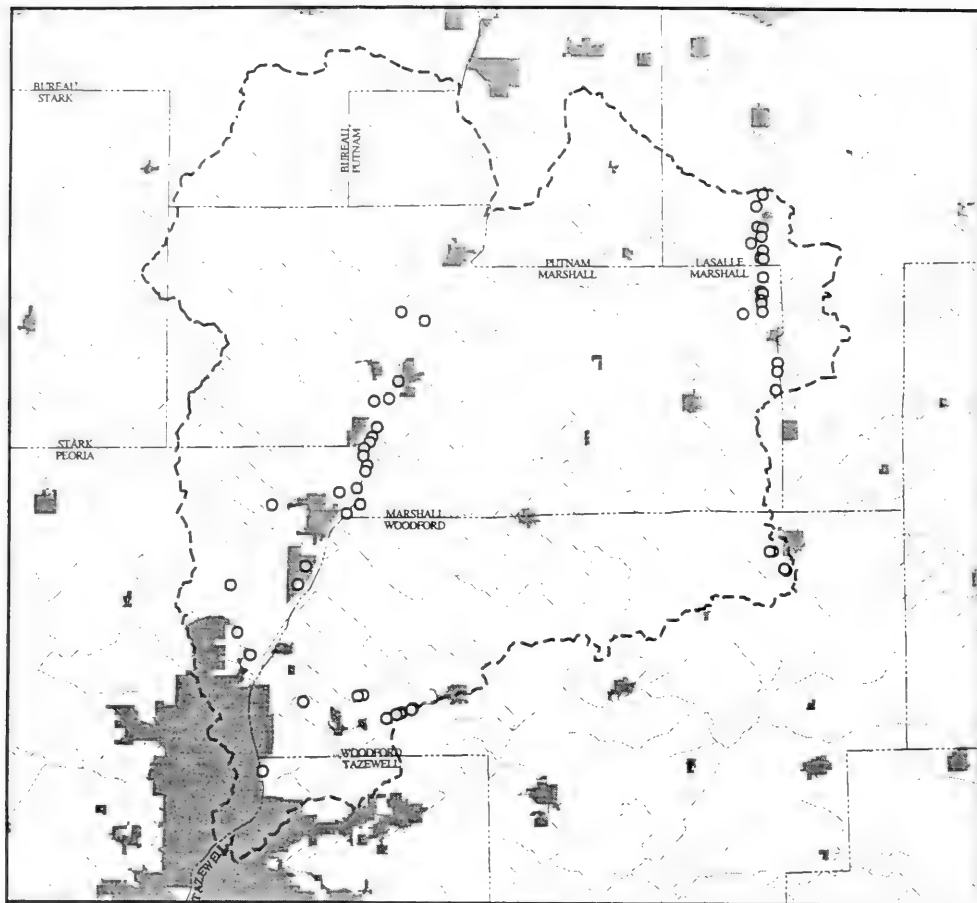


○ Archaeological sites

■ Municipal boundary



Figure 3 –15. Protohistoric archaeological components.

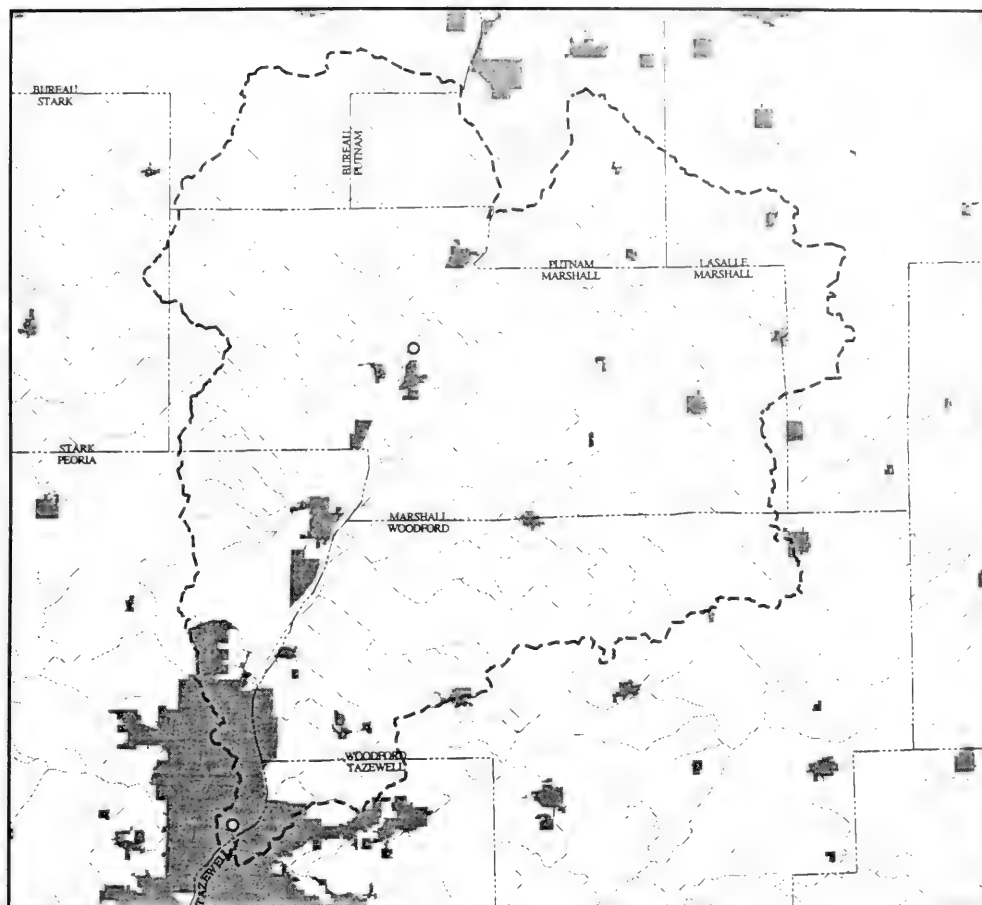


○ Archaeological sites

■ Municipal boundary



Figure 3 -16. Unidentified Historic archaeological components.

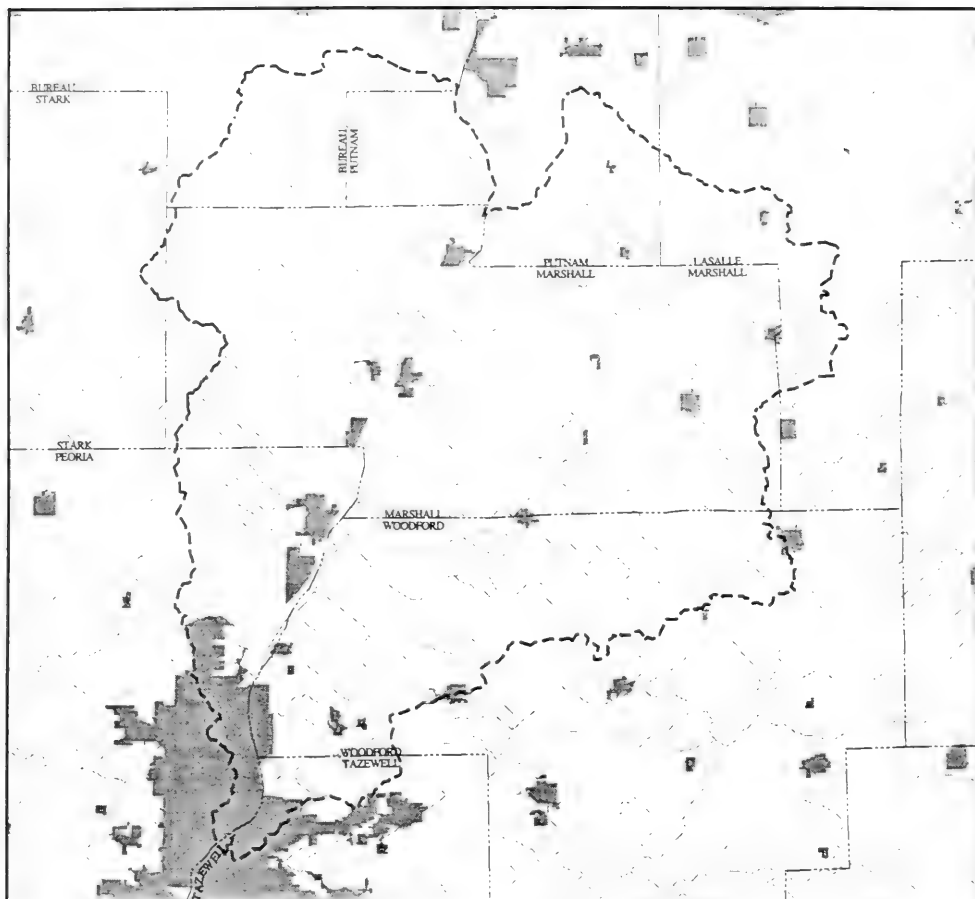


○ Archaeological sites

■ Municipal boundary



Figure 3 -17. Historic Native American archaeological components.



○ Archaeological sites

■ Municipal boundary

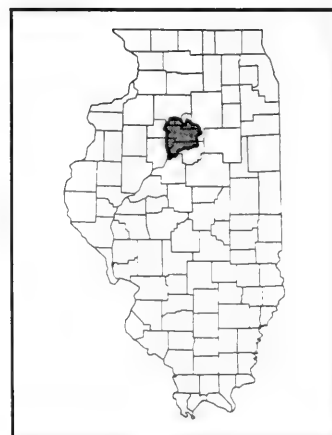
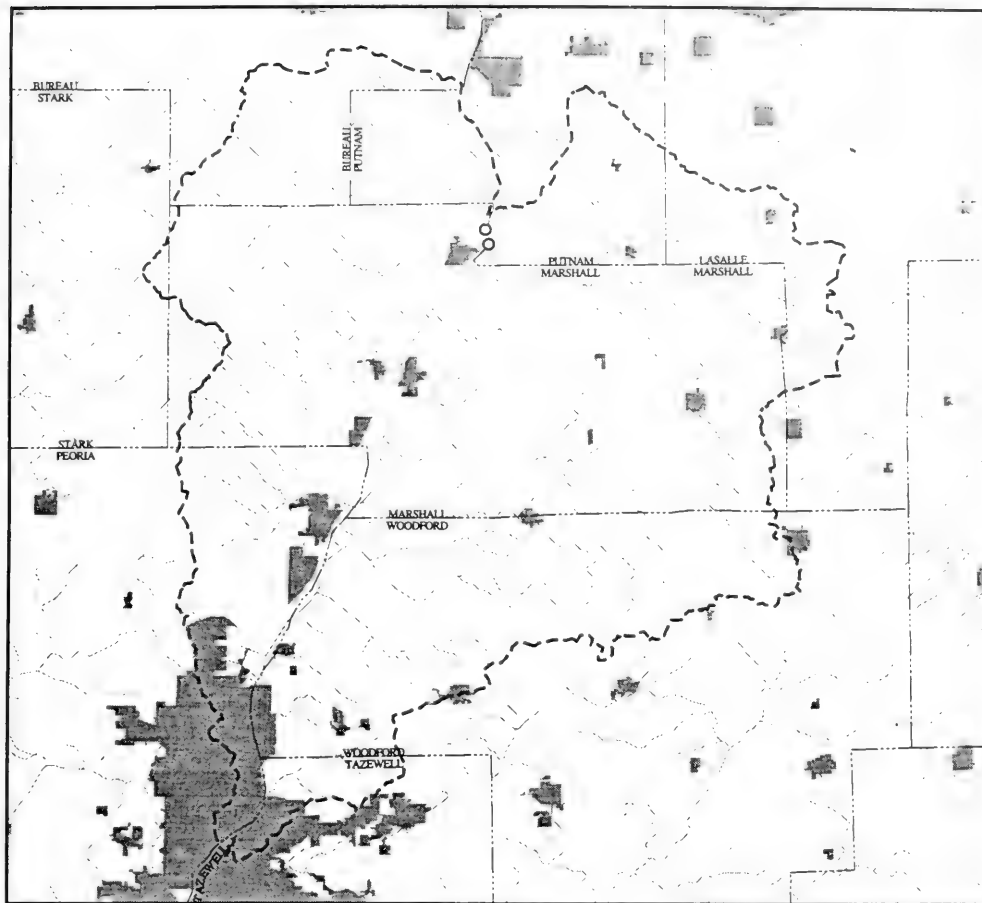


Figure 3 –18. Historic Colonial archaeological components.



○ Archaeological sites

■ Municipal boundary

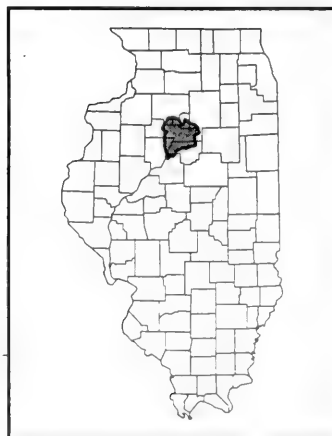
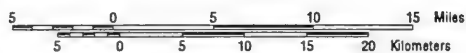
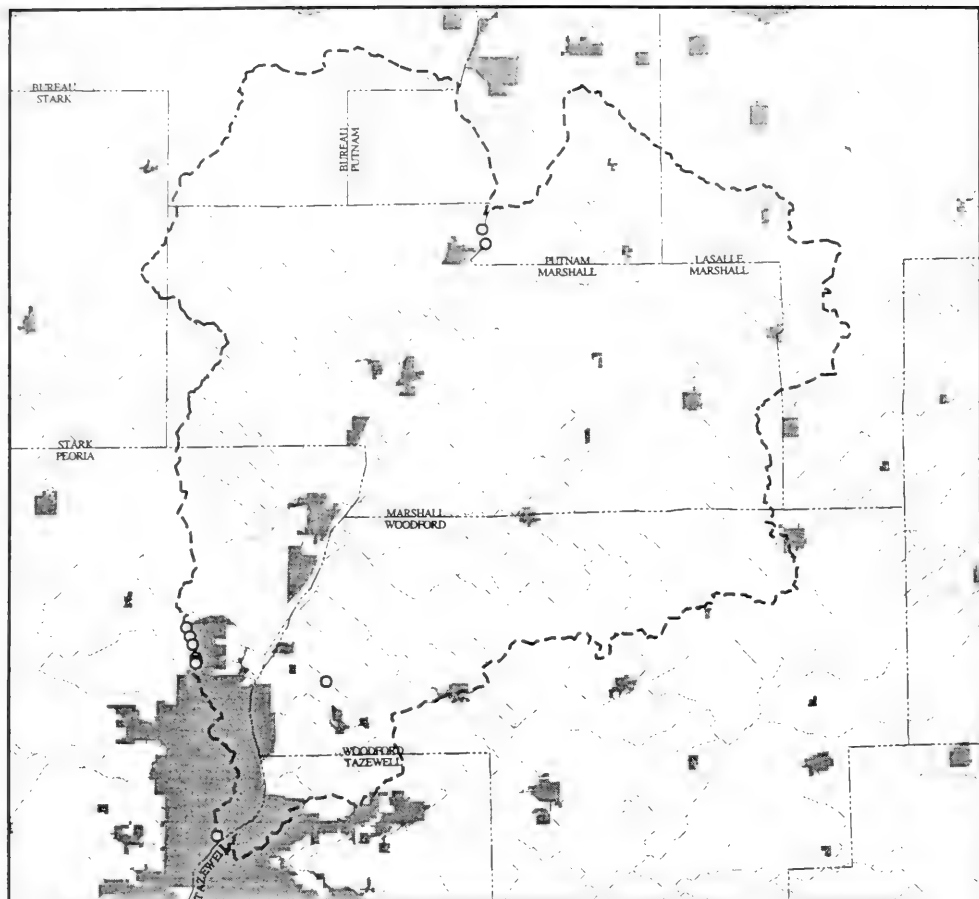


Figure 3 -19. Historic Pioneer archaeological components.



○ Archaeological sites

■ Municipal boundary

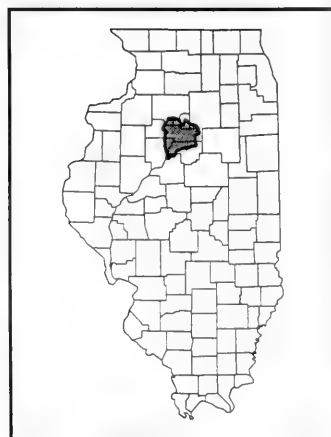
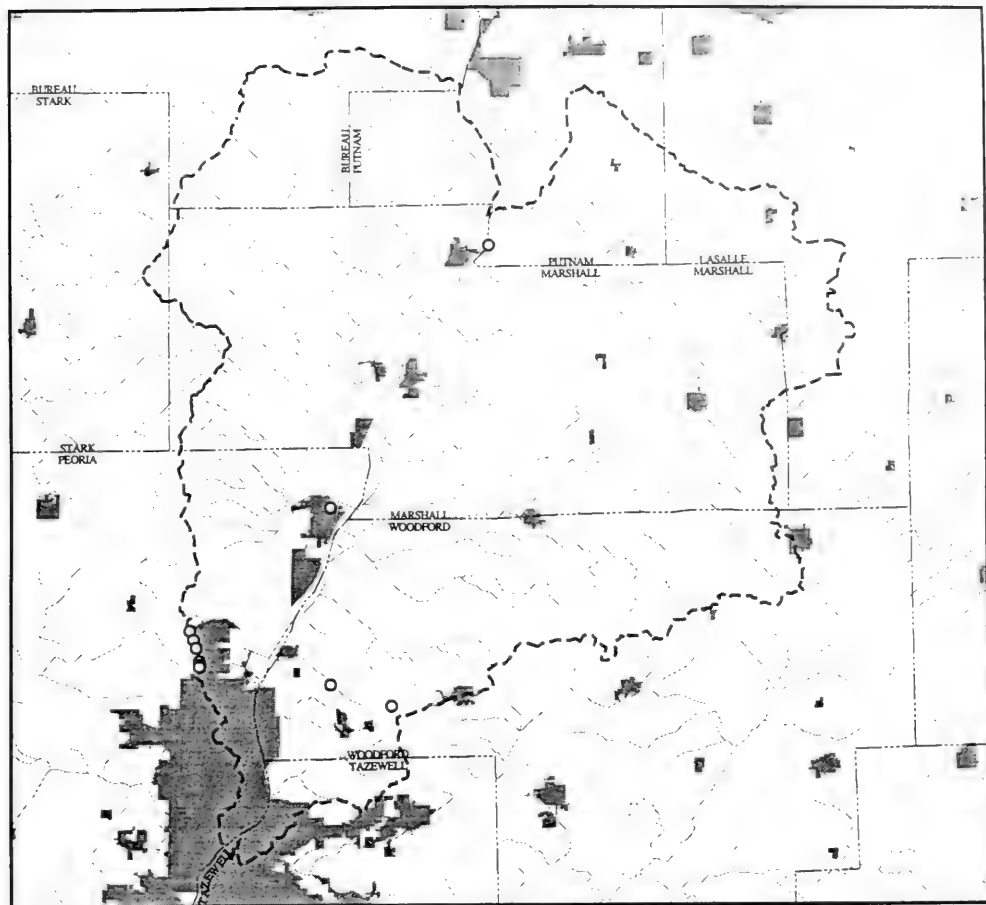


Figure 3 -20. Historic Frontier archaeological components.



○ Archaeological sites

■ Municipal boundary

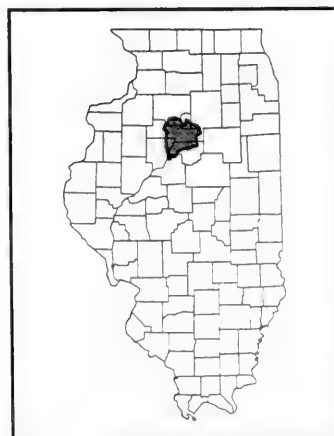
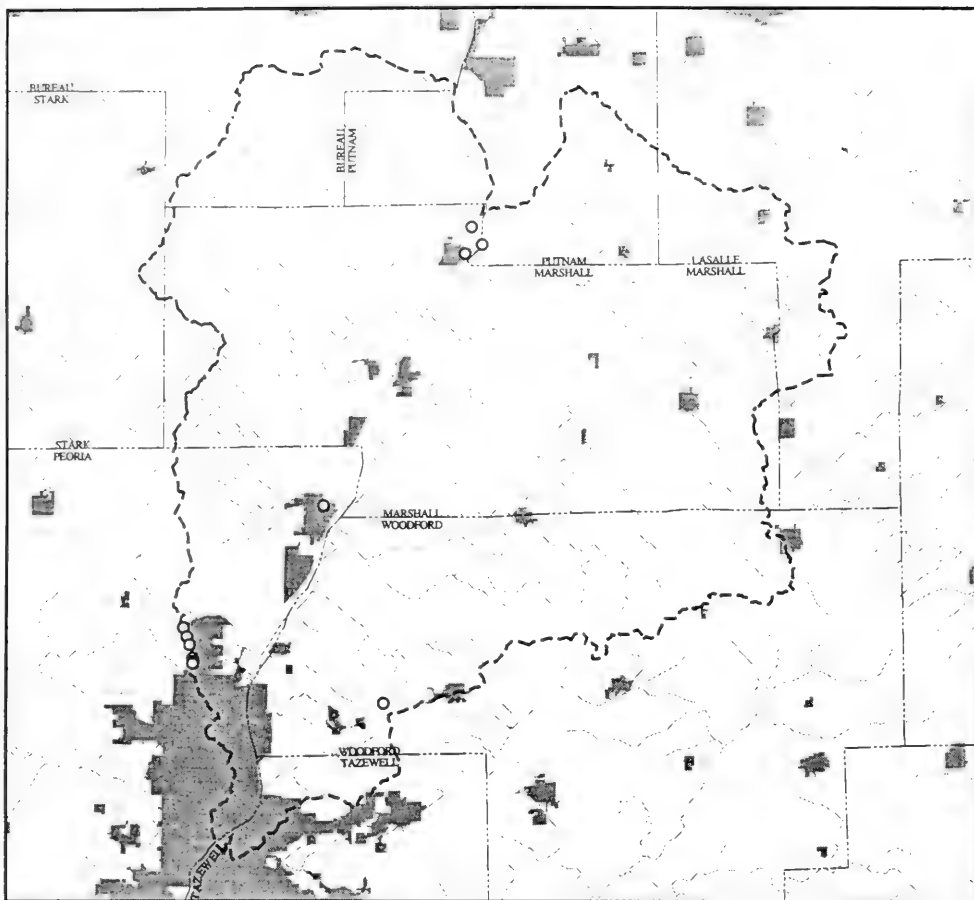


Figure 3 -21. Historic Early Industrial archaeological components.



○ Archaeological sites

■ Municipal boundary

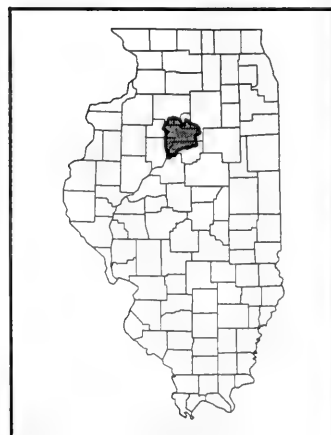
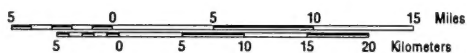
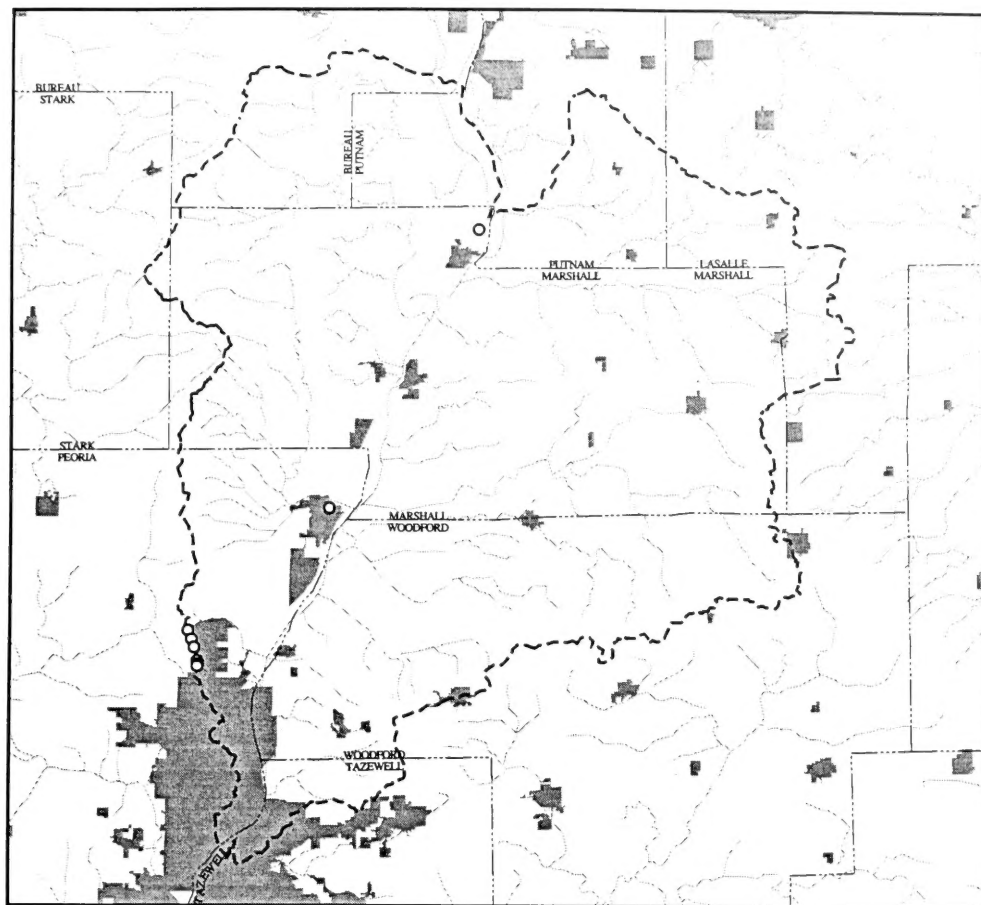


Figure 3 -22. Historic Urban Industrial archaeological components.



○ Archaeological sites

■ Municipal boundary



Figure 3 -23. Historic Postwar archaeological components.

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